ELEMENTS OF PEDAGOGY

WAITE

THE

ELEMENTS OF PEDAGOGY

A MANUAL FOR TEACHERS, NORMAL SCHOOLS, NORMAL INSTITUTES
TEACHERS' READING CIRCLES, AND ALL PERSONS
INTERESTED IN SCHOOL EDUCATION

BY

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PREFACE.

THIS treatise has its origin in a belief that the time has come for such a study of school education as will ascertain the limitations of its maxims and the coördination and harmonizing of its apparently conflicting methods. It embodies the results of an earnest effort to reach these ends by the sure path and in the clear light of psychology and practical experience.

The treatise presents:

1. An analysis of psychical processes, and especially those involved in knowing.

2. A statement of the order in which the several powers of the mind become active, and their relative activity and development at successive school periods, with a graphic illustration of the same.

3. A presentation of the fundamental principles of teaching, carefully deduced from psychical facts, and tested by the best school experience known to the writer.

4. The practical embodiment and illustration of these principles in general methods of teaching.

5. The application of these methods to the teaching of reading, language, geography, and arithmetic,—the branches which most fully represent elementary education.

6. The statement and application of psychical facts to moral training.

The methods of teaching presented embody the results of the author's somewhat wide observation, and it is believed that they fairly represent the best teaching in American schools. They might have been given without a prior statement of their underlying principles, and these might have been presented

without special reference to the psychical facts on which they are based. There is, however, very great advantage in studying these several subjects in the order of their logical dependence; and it is hoped that this will not be found difficult in this treatise, since an effort has been made so to present psychical processes that they can be understood by any one who is competent to teach English grammar. A fuller illustration of these facts of mind would have taken space required for the proper treatment of other subjects.

It is, however, suggested that the reader who has little interest in psychical knowledge, can begin with the principles of teaching (page 97), and, after mastering these and the methods which embody them, he may peruse with profit the pages devoted to the elements of psychology. Experience uniformly shows that a knowledge of methods of teaching can be successfully applied only in the clear light of the principles which they embody, and hence the essential thing for the teacher is to obtain *a clear knowledge of the guiding principles of his art.*

This treatise is submitted to American teachers with the hope that it may give many of the more thoughtful a clearer knowledge of their great art and more satisfactory success in its practice.

CINCINNATI, O.,
July 28, 1886.

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INTRODUCTION.

EDUCATION as an art is based primarily on the nature of the being educated. This fact is illustrated not only in the education of different classes of human beings, as infants and adults, the blind, the deaf, and the feeble-minded, but also in the training of different brute animals, as the horse, the dog, and the monkey. In the education or training of these and other diverse classes, the means employed obviously vary as the nature of the being varies.

Education as an Art.

It follows that the determining of the methods to be employed in the education of any class of human beings involves a knowledge of their educable nature; and hence the determining of methods and courses of school education involves a knowledge of the educable nature of children and youth.

How is this guiding knowledge to be obtained? It is believed that this knowledge is best reached by a careful analysis and study of psychical processes as revealed in consciousness, and then determining the relations of these processes to each other, and the comparative activity and energy of the corresponding powers in the successive periods

Guiding Knowledge.

of school life by a wide comparison of children of different ages and conditions. This order is a necessary one, since the psychical nature of children can not be known primarily by a study of their outer activities, and for the reason that such activities can only be interpreted in the light of psychical knowledge, and this can be obtained only by knowing one's self in consciousness. The Delphic precept, "Know thyself," is not only the door to philosophy, but to all knowledge of human action and experience. The necessary basis of child psychology is general psychology.*

Psychical Processes. What is primarily needed for practical guidance in teaching is a clear knowledge of the psychical processes involved in learning, and hence the author has aimed to present this essential knowledge as clearly as possible. To this end, the processes involved in feeling, knowing, and willing have been carefully analyzed, and their conditions and mutual relations considered, and in all this the leading purpose has been to ascertain and present those facts of mind which most directly relate to the art of education. There has been no attempt to present exhaustively the facts of psychology, much less to give the philosophy of these facts, and for the reason that such knowledge would be of little, if any, assistance to the great body of teachers, whose first need is to see

* "The mental phenomena of children, as well as of adults, of savages as well as cultured people, can never be perceived as external phenomena, but only in one's self, and inferred to exist in others as concomitant to certain external movements or changes which are perceived to exist externally."

—W. T. HARRIS, *in "Psychological Inquiry."*

clearly the foundations of their art. It is feared that even the more thoughtful teachers are confused, rather than helped, by the mass of subtle facts and speculations, which are sometimes given under the name of psychology; and the author confesses his inability to see the practical bearing of much of the so-called philosophy now so often presented as the basis of educational methods.

Study of Psychology.

Besides, whatever may be true of the value of philosophy as a practical guide in education, the only door to it is *a clear knowledge of the facts which it seeks to explain.* It is believed that the non-observance of this obvious principle will explain largely the unsatisfactory results of the study of psychology in some of our higher institutions. Students, who have no adequate knowledge of primary mental processes, are confronted with abstruse theories and speculations to account for them, with criticisms on the same, and even with a history of philosophic inquiry on the subject! As a consequence, the student is confused and bewildered. What a change would appear if all students of psychology were first to spend a few months in a proper study of the elementary facts of the science, including the physiological conditions of psychical action!

Terms Used.

It has not been possible to designate psychical phenomena by terms universally thus applied, and for the reason that there is no universal usage in the nomenclature of psychical science—a few terms excepted. The terms "know" and "knowledge," "think," and "thought," and many other terms of like importance are employed by different

writers to denote different processes and products; and there is a similar diversity and confusion in the use of educational terms. The most that can be demanded of an author is that he employ terms in senses supported by good, if not the best, usage, and that his use of these terms be uniformly consistent. It is hoped that the use of terms in this treatise fully meets this requirement. The question of language has not, however, been permitted to obscure the fact that, for our present purpose, the essential thing is to ascertain the *actual processes involved in psychical activity*, and then so clearly to designate them that there may be neither confusion nor misunderstanding in their application in principles and methods of teaching. The reader is urged to ascertain the sense in which technical terms are used, and then to keep this knowledge in mind when studying principles and methods.

Physiological Knowledge.

The purpose for which an analysis of psychical phenomena has been introduced into this treatise, has neither called for nor justified a full presentation of those facts of physiology which are related to the facts of mind. Any attempt to present the physiology of the nervous organism would have required many pages, and, besides, it would have involved physiological questions, which future researches can alone settle. The most that has seemed necessary in this direction, is a concise statement of the physiological conditions involved in psychical activity, especially in sensation, and a clear recognition of the marvelous interdependence and interaction of mind and body in psychical phenomena. Nor is this limitation any disparagement of the value of physio-

logical knowledge in education. It is fully conceded that the bodily conditions of mental action must be clearly recognized in all educational methods, and especially when the being educated is the growing child. The period of adolescence presents educational problems which can only be solved in the light of physiology.

But this does not change the fact that a primary knowledge of psychical processes can only be gained through consciousness. The researches of physiologists have not yet thrown a ray of light on the nature of mind, or on the manner in which sensorial action occasions mental activity, or on the manner in which mental action produces sensorial changes. The interactions of soul and body in psychical phenomena seem as unsolvable as that other mystery called *life*. What is clearly known is that the phenomena of the soul, as revealed in the certain light of consciousness, are totally unlike the discovered activities of the sensorial organism. The last possible discovery of physiology can only give the *last physical condition* of psychical action.

Researches of Physiologists.

The most important psychical question involved in determining the principles and methods of teaching, is the relative activity and development of the several intellectual powers in the successive periods of child life—a question which, as before stated, can only be settled by a wide comparison of the activities of children of different ages and conditions. The practical difficulty in making such a comparison is the probability that all necessary facts are not yet known, and, at first thought, it would seem

Study of Children.

wise to defer any attempt at such comparison until a wider study of children has been made. The objection to such delay is the important fact that the great work of education can not be arrested while this needed investigation is made. The present generation of youth must be trained, if trained at all, in the light of what is *now* known of child nature and activity, and hence it becomes necessary to take a general survey of the facts known in order to throw the clearest possible light on the present work of the schools.

General Survey.

Moreover, while the information now accessible is not in some respects satisfactory, it is believed that enough is known to render it both safe and wise to draw a few conclusions for the guidance of elementary teachers, and especially when the known facts are interpreted in the light of personal observation and experience. The safety of such a general survey is increased by the fact that the conclusions reached are used in pedagogy as modifying, and not as basal elements. The essential facts of mind are revealed in consciousness, and are presented in general psychology, and what is sought in the study of children is to ascertain what *modifications* of these facts are effected by the varying conditions of child life.

Principles of Teaching.

It has seemed best to deduce from the facts of psychology, and formally state, only the more fundamental principles of teaching, and to present subordinate principles in connection with the methods which embody them. The learner of an art can intelligently apply only a few princi-

ples, and these at first should be fundamental. This is specially true in teaching, the most complex and difficult of arts.

It is believed that the seven principles of teaching formally stated and explained in this treatise, are both fundamental and comprehensive. They run centrally through the art of teaching, and are widely applicable, especially in elementary schools. They are not presented as coördinate, since the first really includes the others, and no attempt has been made to present them in a strictly logical order, the first three excepted. There is a logical sequence, but less obvious, in the last four principles.

Limitations of Maxims.

Great care has been taken to point out limitations when such exist, and this has seemed all the more important since such limitations are so often ignored. One of the most misleading errors in present pedagogic discussion is the sweeping assumption that maxims, which have a limited application, are universal principles of teaching. The pointing out of these limitations may, in some instances, seem to sacrifice strength of statement, but the truth is better *for guidance* than a doubtful epigram.

General Methods.

In presenting methods of teaching, great care has been taken to adapt the same to the actual work of the schools, and to make the characteristic features obvious by simple illustrations. Special attention has been given to the proper coördination of related methods, and the practical union of those that are complementary, as is true of analytic and synthetic methods, oral teaching and book study, the lesson and the recitation, etc. It is

believed that no portion of the book will be more helpful to the great body of teachers than that which presents the practical union of oral teaching and book study as complementary means of school training. The elementary teaching in American schools has, in many instances, swung from almost exclusive book study and drill to as exclusive oral teaching, and the results of each extreme practice have been far from satisfactory. An earnest attempt has been made to show how these two means or methods of school training may be united in the successive grades, thus practically solving one of the most important teaching problems that now confront the educators of the country.

Lessons and Recitations.

An effort has also been made to present the functions and limits, respectively, of instruction, drilling, and testing, in a complete method of school training. It is believed that the division of school exercises into lessons and recitations, and the careful treatment of each, especially the latter, will be welcomed by all teachers who have noted the increasing absence of study in the elementary schools, even in the upper grades. In too many schools the art of testing is becoming one of the lost arts, and under the influence of overteaching, the pupils, in too many instances, are reaching the high school without the power or the habit of self-effort and study. The recitation with its searching tests has an important place in all grades of school, especially in those above the lower or primary.

In presenting methods of teaching particular branches, those branches have been selected that best repre-

sent the several departments of elementary knowledge included in a school course. These are reading, language, arithmetic, and geography. The methods of teaching these branches are presented sufficiently in detail for the guidance of intelligent teachers, and no others will obtain much help from a treatise on teaching. It would be easy to fill a large volume with detailed methods of teaching these branches, but the mere copying of such methods, without seeing clearly the principles involved, would be of questionable advantage. A method is at best but an orderly procedure. What its results will be depends on what the teacher puts into it; and a teacher can never put into a method what he does not himself possess. It is true that there is great advantage in the intelligent study of good methods, but the highest success in teaching is only attained by the teacher's making the methods which he uses, *his own.* They must embody his ideals, and be adapted to his individual power.

Special Methods.

In the discussion of the subject of moral training, a central position has been given to the right training of the will, so little discussed or understood, and it is hoped that new light has been thrown, not only on the question of moral incentives, but also on the place of religion in school education. The necessity of using religious motives in the effective training of the will suggests a practicable mean position between the two extreme views now in conflict,—the one demanding the exclusion of all ideas of God and religion from the public school, and the other insisting that formal religious instruc-

Moral Training.

tion be made the basis of all moral training. From the stand-point of will training, it is seen that what is imperatively demanded is not formal or technical religious instruction in school, so much as the quickening of the conscience and the influencing of the will by the wise use of religious motives and sanctions.

ELEMENTS OF PSYCHOLOGY.

ELEMENTS OF PSYCHOLOGY.

THE HUMAN SOUL.

PSYCHOLOGY is the science of the human soul. It treats of the attributes and phenomena of the soul as manifested in its connection with the body in the present life.

The human soul is capable of three distinct classes of activities, called *feeling*, *knowing*, and *willing*. The affirmations, I feel, I know, I will, express actions which are universally recognized as distinct in kind.

Psychical Powers. The capability of the soul to put forth a definite action, or to act in a definite way, is called *power.** The power of the soul to feel is called the *Sensibility;* its power to know, the *Intellect;* and its power to will, the *Will.*

The Soul a Unit. This reference of the three distinct activities of the soul to three powers, called sensibility, intellect, and will, does not imply that the soul is composed of parts or organs. It is the soul, not a part of it, that feels, that knows, that wills.

*This ability or capacity of the soul is also called *faculty*, but this term suggests too strongly that the soul is composed or made up of separate capacities or faculties. The use of the term power is not entirely free from this objection.

The sensibility might be defined as the soul possessing or exercising the power of feeling; the intellect, as the soul possessing or exercising the power of knowing; and the will, as the soul possessing or exercising the power of willing. The human soul is a unity in essence with a trinity of powers and activities.

Powers Interdependent. It is also to be specially noted that the powers of the soul to feel, to know, and to will are distinct, but *not independent.* The action of the soul in feeling depends more or less on its action in knowing and willing; its action in knowing depends on its action in feeling and willing; and its action in willing depends on its action in feeling and knowing. In other words, the power of the soul to put forth any given activity depends more or less on its power to put forth other distinct but related activities. In the soul's conscious experience the activities of feeling, knowing, and willing are marvelously blended in many complex acts and states; and there is a like marvelous connection and interdependence of the activities of the soul and the body (p. 31).

Intellect Called Mind. The terms soul and mind are often used as synonymous, but the best usage increasingly applies the term mind to the intellect or knowing power of the soul, or, more accurately, to the soul exercising the power of knowing.

OUTLINE ANALYSIS.

The Human Soul.	1. Sensibility—the power to feel.
	2. Intellect—the power to know.
	3. The Will—the power to will.

THE SENSIBILITY.

ALL feelings are actions or states of the soul, and hence are psychical. The feelings may, however, be properly classified as *Corporeal* and *Psychical*, the former having their origin in the bodily organism, and the latter originating more exclusively in the soul.

Classes of Feelings.

The bodily organism in which the corporeal feelings have their origin, consists of the nervous system proper, including the brain, spinal marrow, ganglia, and nerves, and the special nerves of the organs of touch, sight, hearing, taste, and smell. The brain is the central organ of the nervous system; the spinal marrow connects the brain with the nervous system below the head; and the ganglia are subordinate nervous centers. The nerves ramify through all parts of the body, the hair and parts of the nails and bones excepted, and terminate in the skin, internal surfaces, muscles, and the special organs of sense. Their general function is to receive and convey impressions or excitations from the peripheral parts to the nervous centers, and to carry motor excitations from the nervous centers to the peripheral parts. The nerve filaments that carry excitations *to* the nervous centers are called *afferent* nerves, and those that carry excitations *from* the nervous centers are called *efferent* nerves.

Nervous System.

The organs of sight, hearing, taste, and smell are located in the head, in close connection with the brain. The nerves of touch are in the skin (outer and inner) and are distributed unevenly, the tip of the tongue,

the lips, and the ends of the fingers having many nerves, and being the most sensitive parts of the body.

Organ of the Soul. The nervous system is not only the organism of all corporeal activities, including those which occasion the corporeal feelings, but it is the bodily organism on which the soul directly acts in psychical feeling and in intellectual and volitional activity. The brain is eminently the corporeal organ of the mind.*

Corporeal Feelings.

The corporeal feelings include *Sensations*, *Appetites*, and *Instincts*.

Sensations. Sensations are feelings occasioned by some excitement of the nervous organism. They include *general* and *special* sensations. The general sensations include (1) *organic* sensations, those connected with the nutritive, circulatory, respiratory, and other bodily organs, and (2) *vital* sensations, those of rest and fatigue, vigor and languor, health and sickness, temperature, etc. The special sensations include those of touch, sight, hearing, taste, smell, and certain muscular sensations. So much of the nervous system as is involved in sensation is called the sensory organism, or the *sensorium*.

Sensations Localized. Special sensations, and some general sensations, are located by the mind in the part of the sensorium excited or affected. When, for

* See Carpenter's *Human Physiology*; Carpenter's *Mental Physiology*; Lewes's *Physical Basis of Mind*; and E. C. Seguin on the *Nervous System* (Johnson's "New Universal Cyclopœdia.")

example, a cold substance, as ice, is touched with the finger, the resulting sensation has its *locus* in the finger, and, at the same time, is in the soul.* The sensorial excitement is in the nerves of the finger, and is corporeal or physical; the resulting sensation is in the soul, and is purely psychical. The soul not only experiences the sensation, but it perceives or is conscious of it. It is not conscious of nerves or nerve action, of the sensorium excited to action or sensorial action, but *it is conscious of the sensation.* The soul is only conscious of psychical phenomena, and the first psychical experience of which it is conscious is a sensation.

Appetites.

The Appetites are feelings occasioned by the vital wants of the body. The principal appetites are hunger, thirst, sleep, exercise, and the appetite of sex—the first four being related to the preservation of the individual, and the last to the continuation of the species.

Habits of Appetite.

The appetites not only have their origin in the body, but they act under bodily conditions. An appetite may be indulged to excess, and such excessive indulgence results in injury. Appetites for special objects may be acquired, as those for tobacco, opium, alcohol, etc., and these acquired appetites may, in some cases, be transmitted to offspring, and thus become hereditary. The most fear-

* It is not important to raise here the old question respecting the *locus* of the soul. It is sufficient to know that sensorial action affects the soul, and that the resulting sensation is located in the part of the sensorium excited. It is possible that the soul may pervade and animate the entire sensorium.

ful habits to which man is subject have their origin in an abuse of appetite.

Instincts. The Instincts are those impulses which attend sensations and appetites, and, in the absence of directing intelligence, prompt and direct appropriate action. Instinct impels and directs these blind feelings to their appropriate ends. The nursing of the babe, its cry for food, the scream that attends sudden fright, the dodging of a blow, the quick glance at any sudden or strange appearing, the shrinking from a pinch or prick, and the shielding of the eye from too intense light, are examples of actions prompted by human instinct. Instinctive actions are automatic, although they may seem to be rational and voluntary. It is sometimes very difficult to determine whether a given act is instinctive, or rational and voluntary.

PSYCHICAL FEELINGS.

The Psychical Feelings have their origin or genesis in the soul, and are further characterized by the fact that they are never located by the mind in any part of the bodily organism. The psychical feelings include the *Emotions*, the *Affections*, and the *Desires*.

Emotions. The Emotions are those pure feelings which are awakened or incited by the presence of some thought, concept, or idea in the mind, as the emotions of joy, sorrow, pleasure, grief, fear, shame, etc. Their psychical origin is shown by the fact that there can be no emotion in the absence of knowledge adapted to awaken it, and by the further fact that, in the same bodily condition, unlike inciting

knowledge awakens unlike emotions, one intelligence causing ecstatic joy, and another the deepest grief. As an illustration of the second fact, suppose a person in a certain bodily condition be handed the telegram, "Your father is heir to a great fortune," and then suppose that the same person, in the same bodily condition, be handed the telegram, "Your father is dead." It is certain that the resulting emotion in each case would be determined by the intelligence, and not by the bodily condition. There is nothing in science or experience to sustain the assumption that the emotion is occasioned by some sensorial effect produced through the senses. There is nothing in the physical words, as forms or sounds, that can cause sensorial impressions so unlike as the emotions awakened.*

Intensity of Emotions.

It is true that the *intensity* or *degree* of an emotion may depend on bodily conditions, and especially on the condition of the vital organs. Intelligence that would awaken the intensest emotion in one bodily condition, may occasion only a moderate emotion in another. It is also true that an emotion may occasion a sensation, and, by repetition, the two activities or states may be so closely asso-

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* This fact is strikingly illustrated by an occurrence at a county teachers' institute in Indiana. A leading and much-beloved teacher in the county was detained at home by serious illness. At one of the sessions the county superintendent read a telegram as follows: "Clarence is no more." It produced general and deep sorrow among the members, and arrangements for attending the funeral were made. The next day a teacher from the neighborhood entered the institute, and, on being asked when the funeral would take place, replied that Clarence was not dead, but was improving. The surprised but happy superintendent looked up the telegram and found that it read, "Clarence is no *worse.*"

ciated that the presence of either will be accompanied by the other. A sensation may thus revive an emotion, but this fact does not show that the revived emotion had primarily a sensorial origin.

Nature and Classes. The nature of an emotion is determined by the nature of the knowledge or intellectual act or state that awakens it. An apprehension of novelty, wit, humor, beauty, grandeur, sublimity, etc., occasions the corresponding esthetic emotions. The ideas of right, duty, responsibility, obligation, etc., with reference to man, awaken the corresponding ethical feelings. The contemplation of God's goodness, holiness, justice, love, mercy, and grace awakens the religious emotions of hope, fear, humility, gratitude, thankfulness, etc.

Affections. The Affections are feelings directed towards living or existent beings, institutions, and other appropriate objects, as the love of God, kindred, friends, home, country, etc. An affection is characterized by an impulse or movement of the soul towards an external object. It is attended by a pleasurable or a painful emotion.

The affections may be classified as *benevolent* and *malevolent*.

The benevolent affections seek the well-being or good of their object. They include love, friendship, esteem, sympathy, compassion, pity, mercy, gratitude, piety, philanthropy, patriotism, etc.

The malevolent affections tend to injure or do evil to their object. They include dislike, antipathy, contempt, scorn, disdain, envy, jealousy, malice, hatred, anger, revenge, resentment, etc.

The Desires are the cravings of the soul for some real or supposed good not possessed, as a desire for knowledge, influence, station, power, popularity, superiority, success, friends, a house, a painting, a library, etc.

Desires.

The desires involve opposite feelings called *aversions.* The desire for wealth involves an aversion to poverty; a desire for happiness, an aversion to misery, etc.

The distinction between an affection and a desire is clear. In an affection, the soul goes out to an object to affect it; in a desire the soul craves an object to affect itself. The end of an affection is objective and unselfish; the end of a desire is subjective.

When the impulsive tendency of a desire becomes so strong as to incline the soul to the object desired, the desire is called an inclination, and when an inclination becomes habitual, it is called a propensity or disposition. A desire or affection or appetite energized and made intense by the presence of its object, is called a *passion.*

Other Terms.

It is seen from the foregoing analysis of the feelings, that sensations and emotions are more or less passive, and that the appetites, instincts, affections, and desires are active and impulsive. It will be shown hereafter that these impulsive feelings, especially the affections and desires, are *incentives* or *motives* (p. 320).

Motives.

It is also seen from the foregoing analysis that the different classes of feelings are closely related. Sensations pass over into appetites, and both sensations and appetites awaken related

Feelings Related.

affections and desires. Every emotion is attended by a desire, and the affections are usually attended by emotions, and pass over into desires. The movement of the feelings is, as a general rule, towards desire. In the soul's conscious experience the different feelings are blended in many complex states, and this is true of all psychical activities. It will be subsequently shown (p. 39) that the sensations are the genesis of intellectual activity and life.

Voluntary Feelings.

The above analysis of the phenomena of the sensibility has been confined to the natural or spontaneous feelings, with little reference to the voluntary feelings, which will hereafter be considered in connection with the phenomena of the will as a basis of moral education (p. 313). What has been attempted is to make such an analysis of the feelings as will throw needed light on the processes of the mind in knowing. It must suffice, in this connection, to recognize the fact that the soul, in the exercise of its will power, is largely the controller of its feelings, as well as the director of its conscious intellectual activities. The soul may energize a desire by a concurring purpose, or it may supplant it by giving attention to objects adapted to awaken a different or contrary desire. By an act of will any impulsive feeling may be resisted, and another summoned as a motive to action. Whether a desire shall pass over into a purpose, or out into a deed, is under the decision of the will—the controlling and executive power of the soul.

Attention may also be called to the fact that the capacity or power of the soul for any emotion, affection, or desire may be increased by its repeated exercise. It is a law that every act of the soul leaves as a necessary result an increased power to act in like manner, and a tendency to act again. Power and tendency are the necessary resultants of all psychical action. In harmony with this law, the psychical feelings may all be cultivated by appropriate exercise. It is possible by the non-exercise of certain feelings, and the constant exercise of others, to create in man, in a certain sense, a new nature—to substitute for passions and lusts that degrade the soul, those affections and desires that exalt and make beautiful the life. Even an acquired appetite may be supplanted by associating with the thought of it feelings sufficiently unpleasant and repulsive to banish it from the soul. But this subjection of the lower nature to the higher involves the agency of the will—the energizing and quickening of right feelings by a controlling purpose, and hence the education of the feelings is best treated in connection with the training of the will.

Culture of Feelings.

Connection of Soul and Body.

The phenomena of the sensibility show a close connection of the soul and the body. This connection is illustrated by the following facts:

1. The feelings affect the vital functions of the body, and in turn are affected by bodily conditions. A sudden fright or an intense outburst of passion may paralyze the heart or the brain;

Mutually Affected.

intense fear or grief may cause the hair to turn white; a heavy sorrow may impair digestion, enfeeble the action of all the vital organs, and hasten the progress of disease. On the other hand, joy, hope, and kindred feelings promote the health, activity, and vigor of all the bodily powers. "A merry heart doth good like a medicine."

Bodily Manifestation.

2. The feelings have a bodily manifestation. Most of the emotions and affections are expressed by look, voice, or gesture. Love, hatred, anger, pity, envy, etc., are mirrored in the face. The more permanent states of feeling are manifested in features and in habitual postures and movements of the body. A few physiologists have gone so far as to deny the possibility of the existence of an emotion or affection apart from its bodily expression. Whatever may be true as to their necessary co-existence, it is to be noted that the physical expression of a feeling is the effect and not the cause. There is certainly no evidence that the feeling and its bodily expression are identical. The former is psychical; the latter physical.

Size of the Brain.

3. The prevailing feelings not only determine the features and expression of the face, but mental activity, especially in childhood and youth, affects the growth of the brain, the special organ of the mind. The fact that proper exercise develops the muscles and other tissues of the body, indicates that mental activity, involving brain action, must necessarily affect the growth of the brain, and, this being true, the resulting tendency would be often, if not generally, transmitted from parent to child. As

a consequence, the more intellectual races should, other things being equal, have more than the average size of brain. Careful investigations have shown that there is this general correspondence between mental power and the size of the brain, though the exceptions are so numerous that no safe deductions can be based on brain measurements. There is nothing in the correspondence that shows that the size of the brain determines or causes the mental power, but the facts and the analogies alike indicate that the variation in the size of the brain is the *effect* of mental activity of the individual or of his ancestors or of both. The mental derangements that follow injuries and diseases of the brain show the dependence of the mind on the nervous organism for its activity. The soul acts and manifests itself through the agency of the body, and when the body fails to perform its normal function, there is, as a consequence, mental feebleness or aberration. Insanity and delirium are generally, if not universally, due to bodily derangement.

General Harmony.

There is necessarily a general harmony between the soul and the body. They not only develop together, though not always in the same ratio, but their activity and energy generally vary with each other. When the vital energies of the body are lowered by drowsiness, languor, and disease, the psychical activities are depressed. When the soul is energized by strong and buoyant emotions and desires, the bodily powers respond to the quickening influence.

Outline Analysis of the Feelings.

- **Sensibility.**
  - I. Corporeal Feelings.
    - 1. Bodily Organism—Nervous System. (Sensorium.)
      - 1. Brain.
      - 2. Spinal Marrow.
      - 3. Ganglia.
      - 4. Nerves.
        - Sensory.
        - Motor.
      - 5. Senses.
    - 2. Classes of Feelings.
      - 1 Sensations.
        - 1 Physical Conditions.
          - 1. Excitant.
          - 2. Sensorium.
          - 3. Sensorial Excitement.
        - 2. Classes.
          - 1. General.
            - 1. Organic.
            - 2. Vital.
            - 3. Temperature.
          - 2. Special.
            - 1. Sight—color and form.
            - 2. Hearing.
            - 3. Touch.
            - 4. Taste.
            - 5. Smell.
            - 6. Muscular.
      - 2. Appetites.
        - 1.
          - Hunger.
          - Thirst.
          - Exercise.
          - Rest—sleep.
        - 2. Sexual.
      - 3. Instincts.
  - II. Psychical Feelings.
    - 1. Emotions.
      - 1. Nature.
        - 1. Psychical Origin.
        - 2. Physical Manifestations and Limitations.
      - 2. Classes.
        - 1 Esthetic.
        - 2. Ethical.
        - 3. Religious.
    - 2. Affections.
      - 1. Benevolent—love, friendship, esteem, pity, etc.
      - 2. Malevolent—hatred, malice, contempt, revenge, etc.
    - 3. Desires; aversions.
  - [III. Voluntary Feelings.]

THE INTELLECT.

THE Intellect is *the power of the soul that knows;* or, more accurately, *the soul possessing or exercising the power of knowing.*

Knowledge.

To know an object is to be certain that it is, and hence knowing may be defined as the perceiving of the certain existence of an object. The result or product of an act of knowing is knowledge.

No definition can impart an original idea of the mental act called knowing. This idea can alone be gained by a conscious experience of the act. The above definition may, however, be verified by reference to such conscious experience. Knowing and knowledge are here used as generic terms, and, as such, include all intellectual acts and products characterized by *certainty.*

Objects of Knowledge.

Objects of knowledge include (1) the acts and states of the soul and their products, called *subject-objects;* (2) external material objects, called *object-objects;* and (3) the relations of objects, whether discerned intuitively or by thought, called *relation-objects.*

Every object of knowledge must be *real,* since being involves reality, material or non-material. An object that has no real existence can not be known. A psychical object is as real as a material object. The knowing of an object also involves the knowing of its necessary relations, and these are as real as the object itself.

The Presentative Power.

The soul is endowed with the power to know directly and immediately present objects of knowledge. This is called the *Presentative Power.*

The objects of knowledge which may be present to the soul and directly known, include (1) the acts and states of the soul, and the soul itself; (2) external material objects, including material phenomena; and (3) the necessary relations of objects of knowledge, as the relations of space, time, cause and effect, design, being, etc.

Consciousness.

The power of the soul to know its own acts and states and itself as the knower, is called *Consciousness.* Consciousness perceives directly and immediately the soul's phenomena, and on the certainty of this subjective knowledge depends the validity of all knowledge. If I do not know my feelings, my thoughts, and my purposes, *I do not know any thing.* It is not meant that the soul is conscious of all its acts and states, since there may be latent or unconscious psychical processes, but the acts and states of which it is conscious it knows with certainty.

The Ego Known.

Every act of consciousness involves the perception of the soul or *ego,* as well as its act or state. We do not simply know *an* act of knowing, but we know that *we* are knowing. It is not important, in this connection, to determine whether we are conscious of the ego, or whether we know the

ego by what has been called rational intuition.* The important truth is that in consciousness we know both the ego and its act or state, and we are as certain that the ego is as we are that its act or state is.

Consciousness Immediate.

It is further to be noted that consciousness is an immediate perception of the psychical act or state known. It does not succeed the phenomenon which it perceives, but it perceives it *when it occurs*, and hence all psychical phenomena are really complex, the simplest consisting of an act or state of the ego and the perceiving of such act or state.

Degrees of Consciousness.

It is an obvious fact of experience that the soul is not equally conscious of all its acts and states, the degree of consciousness varying from the faintest to the clearest perception. It is an equally obvious experience that the distinctness of consciousness may be increased by directing or applying the mind to the act or state perceived, thus giving greater energy to the perceptive act, and greater vividness to the object perceived.

Attention.

The exercise of this power of active self-direction, with which the soul is endowed, is called *attention.* Attention has many degrees, varying from an intense concentration of the mind on an object to a slight directive energy, and the soul is

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*The writer inclines to the view that we are directly conscious of the ego as well as its phenomena. It is true that rational intuition may apprehend the necessity of *an* ego, but how can intuition apprehend the necessity of a *particular* ego? Further, if the soul is conscious of the intuition, and then *identifies* the necessary subject with itself, such identification comes very near at least to being conscious of itself!

conscious of many objects to which it gives little or no attention. It is thus seen that while consciousness may be attentive or non-attentive, it is very difficult in practical experience to determine the line that separates the one from the other.

This self-active principle of the soul, manifested in attention, is an attribute *of the will*, or, more accurately, of the soul in its power of willing. It is not only present in attentive consciousness, but in all the voluntary activities of the mind. Attention is the energizer and quickener of all the mental powers.

SENSE-PERCEPTION.

The soul is endowed with the power to know directly present material objects. This power is called *Perception*, and, since material objects are perceived by means of the special senses, it may be called *Sense-Perception.* This appellation distinguishes the power from consciousness and the act from the perception of psychical phenomena. Sense-perception may be defined as *the power of the soul that knows directly material objects.*

The special senses involved in sense-perception are touch, sight, hearing, taste, smell, and the muscular sense.

Special Senses.

The function of the special sense-organs is to receive impressions or vibrations from material objects, and convey them to the sensorium proper (p. 24), and thus to its central organ, the brain.

The physical conditions or media of sense-perception are (1) the sensorium, including the special

senses; (2) the presence of a material object adapted to the excitation of the sensorium through the senses;* and (3) the excitement of the sensorium to such a degree as to occasion sensations of which the soul is conscious. When these conditions co-exist, the soul perceives the external material object.

Physical Conditions.

The investigations of physiologists have thrown much light on the manner in which material objects affect the different sense-organs, and also on the excitation and action of the sensorium, and especially of the brain, but they necessarily stop with sensorial phenomena. It is impossible to cross the line that divides the physical and the psychical, and explain physiologically the action of the soul (p. 13).

Sensorial Phenomena.

Sense-perception involves three co-existent psychical elements; viz, (1) sensation, a feeling; (2) the perceiving of the sensation, an act of consciousness; and (3) the perception of the material object, or perception proper. But since the sensation and the perceiving or being conscious of it are necessarily united, these two united acts may be considered one, and called the conscious sensation, and thus the three acts may be considered as only two distinct elements—the *conscious sensation* and *per-*

Psychical Elements.

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*There is an apparent exception to this condition in the case of sensations by an abnormal or subjective excitement of the sensorium, as the sensations of light, sound, and taste caused by electricity, the sensation of light occasioned by a blow on the head or other contusion of the brain, the ringing in the ears occasioned by quinine, etc. But these phenomena are only apparent exceptions, since, while the sensations occur, there is no actual perception of external material objects.

ception proper. The mind in sense-perception is conscious of the sensation in the *locus* of the sensorial excitation, and directly perceives the material object or external cause. If, for example, a piece of ice in the darkness be touched with the hand, it feels cold, smooth, and moist, and through these conscious sensations the mind perceives the object touched to be ice, that is, it perceives the ice.

The special sensations are, as a class, less obtrusive, and less definitely located than the organic and vital sensations, excepting those that are painful. The most obtrusive and definitely located of the special sensations are those of touch; and, generally, the less obtrusive the sensation, the more acute the perception of the external cause. The touch is, in many respects, the leading sense.

Theory and Fact.

Psychologists have made various attempts to explain how the mind passes from its sensations to the knowing of the related material objects. Most of the theories submitted have the fatal defect of assuming the activity of mental powers *that depend on sense-perception for such activity.** The young child sees material objects long before it can make an inference or reason from effect to cause. Whether the act of perception be explicable or not, it will suffice, for our present purpose, to know the fact that the mind is endowed with the power to

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*Several of these theories involve a knowledge of the structure and function of the sense-organs and the sensorium, whereas the mind in sense-perception does not consciously perceive either the sensorium or sensorial action. It is said that even Aristotle did not know that the eye has a retina, much less that visual objects are imaged thereon.

perceive material objects when the necessary physical conditions exist.

Sense-perceptions may be classified as *original* and *acquired.*

Original Perception. An original perception is the perception of phenomena appropriate to a given sense by the exercise of that sense. The original tactual perceptions are perceived through the sense of touch; the original perceptions of color through the eye; of sound, through the ear; of smell, through the nose; of taste, through the organs of taste; and of weight and resistance or pressure, through the muscular sense. A completed perception through any sense or senses involves discrimination; that is, the discerning of the object perceived as separate or distinct from other perceived or known objects; and hence discrimination is one of the primary acts of the mind.

Acquired Perception. An acquired perception is the perception of phenomena appropriate to one sense by means of another sense. We learn by experience to perceive by the eye that a surface is smooth, or a rod of iron hot. A smooth surface "looks smooth," and iron, heated to a red or white heat, "looks hot." We learn to perceive that a cask is empty or full by rapping on it; that the wind is blowing by the waving of the trees; that the ground is frozen by the noise made by a passing wagon; that a church edifice is near by the notes of the organ, etc. These acquired perceptions all depend on the prior existence of the original perceptions. A person born blind never gains an idea of color, and a person born deaf never gains an idea of sound. The senses

of touch and sight are very closely associated, and the action of all the senses is intimately blended in experience.

The acquired perceptions involve the activity of the higher intellectual powers, as memory, judgment, induction, etc., and the facility with which the mind interprets various sensations is marvelous. The mind perceives much more than the senses disclose.

Effects of Attention.

In perception the senses may be directed, energized, and made acute by attention. The directions, Listen! Hark! Look! See! are appeals to the will to direct and quicken perceptive power, and how marvelously acute may any sense be thus made—or, more accurately, the mind acting through any sense. By an act of will, the mind may be held to the observing of only one of the many objects presented to it by a single sense, even to the exclusion of the others. An auditor may, for example, attend to only one voice in a chorus, hearing it distinctly, and so absorbed may be the mind as to hear only the one voice. The will may also lower or quite suspend the activity of one sense, while another sense is directed and energized. An observer may become so absorbed in seeing the General of the Army, marching at the head of a column, as not consciously to hear the band of music which precedes him.

Degree of Attention.

As a general rule, the mind distinctly perceives only those objects to which it gives some degree of attention—the exceptions being the cases in which the mind is spontaneously incited and held by the attractiveness of the object

perceived. An observer may pass through a gallery of paintings with mind fully absorbed in something else, and may go away with only an indistinct impression of the collection, or he may pass through without giving special attention to any of the paintings, and carry away only a general impression of the collection. If, however, the observer carefully studies one or more of the paintings, these may be recalled with distinctness even after the impression of the whole collection has become confused and indefinite. The same is true of the figures or objects in a single painting, all of which are at once imaged on the retina of the eye. An observer of West's "Christ Rejected" may direct his attention almost exclusively to the Christ, or to Christ and Pilate, or to Christ, Pilate, the High Priest, and the prostrate Magdalene, and afterwards in recalling the painting only the figure or figures thus closely observed will be clear and distinct. These facts show that the permanency of the mental results of perception depends largely on the degree of attention that directs the perceptive act—a fact that has an important bearing on teaching.

Interest.

It is to be noted, in this connection, that while the mind may be directed and the senses energized by mere force of will, the attention is most easily given when the mind is attracted to or interested in the object observed. Interest invites and sustains attention, and this fact bears directly on the art of teaching.

It is also to be observed that attention in sense-perception involves sensorial or nervous action. The eye, the ear, and the other senses are not only di-

rected, but are quickened by means of nervous energy or action imparted by the will, and close attention taxes and rapidly exhausts this nervous energy. When the amount of disposable nervous energy is exhausted or greatly reduced, there is a conscious decline in the power of attention. This fact has also an important bearing on teaching, and especially on the teaching of children.

Nervous Energy.

INTUITION.

The soul is also endowed with the power to know directly and immediately the necessary relations of objects. This intellectual power is called *Intuition.*

The necessary relations known by intuition include the relations of space, time, being, substance and attribute, cause and effect, means and end, design, etc. One or more of these relations condition the perception of every object of knowledge, since the knowing of an object involves *the knowing of its necessary relations.* The intuitive perception of extension is clearly involved in the perception of an extended material object, and the intuitive perception of time is involved in the knowing of successive events.

Relations Perceived.

Intuition, like sense-perception and consciousness, has its necessary conditions of activity, and, when these conditions exist, the mind by an immediate and inexplicable act perceives the involved relation. One of the conditions of every original intuition is that the necessary relation be presented to the mind *in the concrete.* The mind first perceives the relation of space in the concrete, for ex-

Conditions.

ample, in the perception of an extended object *as extended.* It thus intuitively perceives the relation of space. The relation of time is originally perceived in the perception of events or phenomena *as succeeding each other.* These relations of space and time are not discerned by sense-perception, since they condition sense-perception, but are perceived intuitively.*

Intuitions not Inductions.

All attempts to explain the intuitions of space, time, being, causation, etc., as inductions of experience, involve the absurdity of explaining an act by a process *that is conditioned by such act.* Every induction is based upon and involves one or more of these intuitions. The theory that the idea of extension is derived from the mind's connection with an extended sensorium, involves the intuitive perception of the sensorium *as extended.*

PRESENTATIVE PRODUCTS.

Every presentative act of the mind results in a *psychical product,* and this product varies with the producing act.

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* Intuition is considered by many psychologists as an act of the reason, but, when thus treated, it is made to include thought processes as well as the presentative act that is considered intuition in the above analysis. Intuition is not the rational apprehension of the *necessity* or *universality* of a necessary relation, or its generalization, but the direct and immediate perception of the relation when presented to the mind in the concrete. These perceived relations are expressed by such simple terms as *before*, *after*, *over*, *under*, *cause*, *effect*, *etc.* These necessary relations are as directly and immediately perceived by the mind as are the sensible phenomena of material objects, and are as clearly presentative acts. These primary intuitions are the elements which are generalized into such universal truths as "Every event has a cause."

The perceiving or knowing of a feeling, as an emotion or a desire, results in a product, and it is this product (not the feeling) that is recalled and reproduced by memory (p. 49). The products of consciousness are *ideas*,* and the same term is applied to the products of intuitive acts. Intuitive ideas are also called *intuitions*.

Ideas.

The perception of a material object results in a psychical product, and this may be simple or compound. When this product is the result of one perceptive act through a single sense, it is called a *percept*, and hence a percept is the simplest sense-product.

Percept.

When the percepts, resulting from several perceptive acts through one or more senses, are combined by synthesis into a psychical whole, the resulting product or image is called a concept, and the synthetic act is called conception. But to distinguish this individual concept from the general or thought concept, hereafter considered (p. 62), it is called a *sense-concept*, and to distinguish the producing synthetic act from the thought process that forms the general concept, it is called *sense-conception*. Whether a sense-concept is composed of few or many elements, it always represents an in-

Sense-concept or Image.

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* A reference to any good English dictionary will suffice to show that the term idea is applied to almost every mental product, from the simplest percept to the most complex notion or conception. For the purposes of this treatise, it has seemed best to apply the term to those intellectual products which are simple and not imaged. A sense-percept may be ideated or made abstract, and the result is then an idea. We have abstract ideas of color, form, hardness, smoothness, roughness, etc.

dividual object, as a tree or a horse, and hence it may properly be called an *individual concept.*

It is thus seen that presentative products are called ideas, percepts, and sense-concepts, or individual concepts, and that these products all represent *individual objects of knowledge.*

Images.

It is to be observed that sense-concepts are not necessarily or usually composed exclusively of sense-percepts. They also contain ideas furnished by consciousness and intuition, and all sense-concepts involving acquired perception contain thought elements (p. 41). This fact is an objection to the calling of sense-concepts images, as has been proposed. The ideas of consciousness and intuition and thought elements can not be imaged, and hence the mental image, resulting from sense-perception, contains only a part of the elements that form the individual concept. It is, indeed, a question whether all percepts can be imaged, the percepts of smell, taste, and sound being at least apparent exceptions.

Man's Condition with only Presentative Power.

What would be man's intellectual condition were he endowed only with presentative power—the power to know present objects of knowledge? It is evident that the individual products of consciousness, sense-perception, and intuition would constitute the sum total of human knowledge, and *each of these would vanish with the act that produces it.* There would be no past in consciousness and no anticipated future. The conscious psychical life of every human being would be its present existence—a moving point. The

so-called universe of man's knowledge would be bounded by the limited reach of the physical senses, and, without the aid of the higher mental powers, as in acquired perception, this reach would indeed be very limited. The sensorial effects produced by material objects through the senses are at best but imperfect *indicia* of what the mind actually perceives and knows. The powers of thought discern vastly more than the eye or other sense discloses (p. 42).

The Representative Power.

The soul is endowed with the further power to represent and reknow objects previously known. If, for

Representation. example, I look at a tree and then close my eyes, I see the tree in "my mind's eye,"* and yet what I see when my eyes are closed is not the real tree, but that which represents and recalls it. The first of these acts (the seeing of the tree) is sense-perception, and its product is an image or sense-concept; the second act (the seeing of the tree in the mind's eye) is representation. Representation may be defined as *the representing and reknowing of objects previously known or experienced.*

The recalling and representing of an object previously known involves primarily the reproducing of

What reproduced. the mental product which resulted from its previous knowing or cognition, and this involves a self-active power of the soul. The distinc-

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*Dr. Porter uses a similar illustration with this quotation:

Hamlet.—My father—methinks I see my father!
Horatio.—Oh, where, my lord?
Hamlet.—In my mind's eye, Horatio. —Shakespeare.

tion between representation and sense-perception is obvious. Sense-perception gives the original psychical product, whether a percept or sense-concept; representation recalls and reproduces this original product. Sense-perception is a presentative act, the object perceived or known being present; representation reproduces the presentative product, and thus represents the object previously known.*

But representation is not limited to the reproduction of the products of sense-perception. It reproduces, in like manner, other presentative products (the ideas of consciousness and intuition) and the products of all other mental acts, including thought products and the creations of the imagination (p. 57). It is, however, to be specially noted that the feelings and other experiences of the soul are not reproduced in representation, but the *ideas* of these feelings and experiences (p. 46).

Retention.

The continuation of the power to reproduce the products of past psychical experience is called *retention*, and hence retention is a condition of representation. When this reproductive power is not retained, representation is impossible. It is to be observed that what is retained is not the psychical product, whether an idea, concept, or thought, but *the power to reproduce it.*

* Dugald Stewart uses conception to denote representation as here described, but it seems better to use the term conception to designate the forming of the general concept (p. 62), and sense-conception to denote the synthesis of the original sense-concept or image (p. 46). Several psychologists include both the reproduction of the sense-concept and its original synthesis in the acts of the imagination. There is an advantage in using different terms to denote these different acts and processes.

This fact satisfactorily explains what are called "the laws of association." These laws have been often referred to some condition or force external to the mind, as the laws of cerebral activity, the attraction of ideas, etc., but representation is a mental act, and the active principle is in the mind itself. The conditions of psychical action may be external, but the principle of such action must be internal or subjective. This subjective principle of representation is stated by Dr. Porter (Human Intellect, p. 282) in these words:

Laws of Association.

"*The mind tends to act again more readily in a manner or form which is similar to any in which it has acted before, in any defined exertion of its energy.*"

This principle of psychical tendency explains all the phenomena of representation, and is in harmony with all its known conditions, including bodily states, states of feeling, special associations, energy of original activity, vividness of apprehension, strength of attending emotion, recentness of experience, frequency of recurrence, coincidence with prevalent habits, etc. The facility with which the mind reproduces the product of any past experience depends on one or more of these conditions, *for the reason* that they increase the tendency of the mind to act again as it has acted before. The two enduring results of all psychical activity are *power* and *tendency*, and the greater the energy and intensity of the act, the greater, other things being equal, the resulting power and tendency (p. 31).

This principle has a wide application in education. It not only applies to the training of the memory and other mental powers, but to the cultivation of the feelings, the will, and even the bodily powers.

Simple Representation.

It is possible for the mind to reproduce the product of a past cognition or experience without reknowing or recognizing the object represented as one previously known. I may, for example, see "in my mind's eye" a face, previously seen, without recognizing it. In like manner, I may recall a verbal expression or a sentiment without recognizing it as an expression or sentiment previously heard or known. In these examples the products of past cognition or experience are simply reproduced in consciousness, and are thus represented to the mind. This is the simplest form or act of representation, and hence is properly designated as *simple representation.* Simple representation may be described as *representation without recognition.* It is also called phantasy, but phantasy includes other phenomena (p. 58).

Memory.

The mind has the power not only to represent objects previously known, but to reknow or recognize them as objects of previous cognition. This includes not only the representation of the objects previously known, but also the representation of their essential relations of time, place, and the ego. This complete representation of the soul's past experience is *Memory.* Memory may be defined as the power of the soul to *represent and reknow objects previously known or experienced.*

Elements of Memory.

It is thus seen that an act of memory consists of two distinct acts; viz, (1) the representation of an object previously known (including recalling or recollection and reproduction,) and

(2) the reknowing of the object as previously known. In other words, memory includes *simple representation* and *recognition*, the latter being the characteristic element.

It is not essential to an act of memory that the two elements of representation and recognition be equally full and distinct. The representation may be full and vivid, and the recognition partial and faint, or the recognition may be full and clear, and the representation only a faint outline. I may, for example, vividly recall a painting once seen, or a startling cry of distress once heard, but may not be able definitely to locate either in time or place, only certainly knowing that I once saw the painting or heard the cry. This would be an example of vivid representation and imperfect recognition. On the other hand, I may recall with great distinctness the time and place of a meteoric shower, and my feelings as I witnessed the grand display, and yet I may be able to reproduce only a faint image of the scene. This would be a case of full and clear recognition with partial and faint representation.

Perfect and Imperfect Memory.

In perfect memory both representation and recognition are full and clear; in imperfect memory one at least is partial or indistinct. As a rule, representation is more or less imperfect. This is chiefly due to the fact that the mind does not give equal attention to all the elements that make up a psychical experience, and, as a consequence, the mind does not equally retain the power to reproduce them. The elements that receive the greatest attention and involve the intensest psychical activity are the most readily recalled. The fact that

the several elements of a complex past experience are reproduced one by one, by successive acts, contributes to this result. The eye, for example, may take in a landscape at a glance, but the resulting image is represented to the mind by a succession of acts under the conditions of association, and only the more distinct features are reproduced.

The Ego in Memory.

It is to be noted that while the relations of time and place may not be distinctly represented and recognized in every act of memory, the mind must clearly recognize as its own the psychical experience represented. When this ego relation is not distinctly recognized, the act is not memory, but simple representation.

Forgetfulness.

The question has often been raised whether absolute forgetfulness is possible. Numerous well-authenticated examples of recalling apparently long-forgotten acquisitions and experiences strengthen the theory that the mind never absolutely loses the power to represent any conscious experience, and that apparent forgetfulness is due to unfavorable *conditions* of soul or body.

Ideas Recalled.

Attention is also called to the fact that memory does not represent the actual objects previously known, but the products of their previous cognition, and this is true of all psychical experiences. The memory of a grief, for example, is not the grief refelt, though the memory may awaken a like grief. Memory recalls only *ideas* of the joys and sorrows, pleasures and pains, hopes and fears, choices and denials, spiritual victories and defeats, which we may have experienced (p. 49).

The so-called arts of memory are based on the conditions of representation already stated (p. 52). The obvious and essential fact is that, other conditions being equal, *the mind recalls most readily what it apprehends most clearly.* But a clear and vivid apprehension depends on close attention, and this depends on active interest, which is usually excited by emotion, affection, or desire. These subjective conditions are modified by bodily health, mental habits, frequency of repetition, nature of associations, freedom from mental distractions, etc. Most of these conditions are included in Coleridge's three memory arts for the student; viz, *sound logic, healthy digestion,* and a *clear conscience.* The first of these arts is intellectual, the second physical, and the third moral.

Arts of Memory.

The one comprehensive rule for the cultivation of the memory is *its exercise with fidelity to the truth.* The proper exercise of any power increases it (p. 31), and the memory is no exception. True memory involves a faithful reproduction of past experience, and its exercise may be vitiated by modifications suggested by prejudice, desire, or fancy. The habit of mixing what is imagined or conjectured, with what actually occurred, weakens the memory and lessens its trustworthiness. Dr. Porter truly says "that, while the liar has more pressing need of a good memory than other men, he is of all men the least likely to possess it." (Human Intellect, p. 325).

Cultivation of Memory.

Memory may be distinguished as *spontaneous* and *intentional.* In spontaneous memory the will is pas-

sive, the representative act being involuntary; in intentional memory the will is active and directing, and the representative act is voluntary. The several varieties of memory, as verbal, historic, philosophic, mathematical, etc., are readily explained by the principles and conditions of memory above given.

Kinds of Memory.

IMAGINATION.

The mind is also endowed with the power to modify and recombine the reproduced ideas and images of objects previously known. This modifying representative power is called the *Imagination.* The imagination may be defined as *the power of the mind to represent and modify or recombine objects previously known.**

It is this power *to modify* and *recombine* past psychical experiences that distinguishes the imagination from memory. Memory represents an object *as* it was previously known. It faithfully reproduces the products of past experience—telling the truth. The imagination changes these individual products or groups, and combines them at will. The memory, for example, reproduces the image of a tree as formed by seeing it; the imagination changes this image in one or several respects. The image re-

Memory and Imagination.

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*Several psychologists define the imagination as the imaging power of the mind, and include among its acts the synthesis of sense-concepts, and the reproducing of the sense-products in representation and memory. According to this view, the imagination includes phases of sense-perception, representation, memory, and even phantasy. The author has preferred to use the term imagination to designate a distinct mental act or process and its corresponding power.

produced by memory represents a tree actually seen; the image formed by the imagination represents no actual tree. The imagination is the modifier, recombiner, and creator of psychical images.

The imagination has three somewhat distinct phases of activity and development, which may be designated as the *Modifying*, the *Constructive*, and the *Creative*.

Modifying Phase.

1. The modifying phase includes (1) the imagining of one known thing to be another known thing; as the conceiving of a broomstick to be a horse, a row of blocks a train of cars, a doll, a live baby, etc.; and (2) the imagining of a known object, material or spiritual, to be enlarged or diminished in size or intensity, or otherwise changed in some attribute or quality; as the conceiving of a mouse to be as large as a dog, or a dog as small as a mouse, snow to be red, ice to be hot, etc. Both of these forms of modifying the products of psychical experience appear very early in the child's life.

Constructive Phase.

2. The constructive phase of the imagination includes the combining of psychical elements, suggested by another mind, into new wholes, also suggested; as the imaging of a tree, an animal, or a house from a description, pictorial or verbal. The elements thus combined or synthesized are furnished by the representative power under the guidance of another mind, and the resulting whole is not an original creation. I may, for example, show another person the picture of a family, and add a verbal description of the parents and the children, their feelings towards each other, their actions, etc., and, as a result of constructive activity, the person observing and hearing will have a mental picture of

the family more or less similar to the one in my own mind. This is eminently the *school phase* of the imagination, and is exercised in teaching reading, geography, etc.

3. In its creative phase the imagination conceives or constructs new wholes from materials or elements furnished by representation, the whole thus constructed being a new creation; as the imaging of an unseen landscape, a dramatic scene that represents no real occurrence, etc. It is the creative imagination that furnishes the artist, the inventor, and the discoverer with their ideals, and that characterizes the poet, the dramatist, and the novelist.

Creative Phase.

In all these forms of activity, the imagination uses the materials or elements furnished by representation from experience. It creates no new element. The painter can not imagine a new color, nor can the dramatist imagine a new emotion, affection, or desire. But the imagination can modify the products of experience. The painter can change a color to a hue or tint which he has not seen, and the poet can imagine a love more intense and devoted than he has ever felt, and a passion more consuming than has ever burned in his bosom. Shakespeare may have never experienced the intensity of Othello's jealousy, or the horror of Macbeth's remorse.

Materials Used.

It may be added that the imagination acts under the control and guidance of the other powers of the intellect and of the will, and in the most active conditions of the soul. All its crea-

Further Conditions.

tions are in harmony with the laws and relations of space, the conditions of time, and the other necessary relations of real beings and phenomena.

PHANTASY.

The tendency of the soul to repeat its former acts and states manifests itself in an interesting form of representation, called *phantasy*. It is characterized by the fact that the reproductive act is spontaneous and involuntary, and especially by the fact that past images, whether the products of sense or imagination, are reproduced in capricious and often inexplicable combinations. As in simple representation (p. 51), the reproduced images are not recognized as the products of past experience, and, in some cases, the resulting phantasms seem present realities.

Conditions of Phantasy.

This spontaneous and capricious activity of the representative power occurs when the other mental powers and the will are partially or wholly passive, as in reverie, dreaming, and various forms of delirium and insanity. In day-dreams or reverie, the simplest form of phantasy, the other powers of the soul are sufficiently passive to permit the imaging power to act under the law of association without interruption, and past images, suggested by some obtrusive feeling, may throng the mind. In certain wakeful states, called distraction, unbidden phantasms may follow each other so rapidly as to prevent memory, thought, or other intellectual acts.

In some phases of phantasy, recognition or memory is more or less united with reproduction. An interesting example of phantasy in reverie, with partial

recognition, is given in Galton's "Inquiry into the Human Faculty" (p. 173). Mr. Galton says:

"I once passed into a shop in London to order a Dutch cheese, and the proprietor (a bullet-headed man whom I had never seen before) rolled a cheese on the marble slab of his counter, asking if that would do. I answered 'Yes,' and left the shop, and thought no more of the incident. The following evening, on closing my eyes, I saw a head, detached from the body, rolling about slightly on a white surface. I recognized the face but could not remember where I had seen it, and it was only after thinking about it for some time, that I recognized it as the head of the cheese-monger who sold me the cheese on the previous day."

How occasioned.

It is believed that this spontaneous activity of the imaging power is usually occasioned by some nervous or sensorial excitement which awakens sensations previously associated with the objects represented. Mahan gives the illustration of a sick person with a bottle of hot water at his feet, who dreamed that he was walking upon the crater of Ætna. He once had felt similar burning sensations when walking upon the crater of Vesuvius, and he had just been reading of a traveler's experience upon the crater of Ætna (Mental Philosophy, p. 100). The necessary sensorial action may be caused by indigestion, cerebral excitement, or other derangement of the nervous organism. All that is required is sensorial excitement awakening sensations which, in turn, become the excitants of the reproductive power in associated activities.

Creative Phantasy.

The mind in phantasy seems also endowed with a creative energy that goes beyond representation, and this may be true; but many of the wild and grotesque phantasms that seem creations are only strange combinations of separated im-

ages occasioned by abnormal sensorial activity. The thought powers are also sometimes unusually active in sleep. We have illustrations in the solution of problems in sleep that baffle the mind when awake, and in the command of a felicity of thought and expression that excels all wakeful efforts in this direction. This may be due to an unusually excited condition of the intellect, and the concentration of its thought powers on the one activity without the distractions of sense or memory.

Hallucinations.

There is a marked distinction between the products of phantasy proper, and those hallucinations or spectral illusions that characterize the deliriums of the insane victims of alcohol, opium, and other poisonous drugs, and also of other maladies that destroy the normal action of the senses and the brain. In phantasy, the senses are either not active or receive little attention, but in hallucinations and apparitions the senses are active and coöperative, and often their abnormal activities occasion the illusion. The malady affects the special sense-organs, and produces sensations which mislead the perceptive power. The anticipations of the mind also exert a remarkable influence upon sensorial action.

Man's Condition with only Presentative and Representative Powers.

It may be both interesting and suggestive to ask here what man's intellectual condition would be were he endowed only with presentative power, including consciousness, sense-perception, and intuition, and representative power, including memory, imagination,

and phantasy. Since all objects known by presentative activity are individual, all represented objects would necessarily be individual, and hence *all of man's knowledge would relate to individual objects, and would be limited to his individual experience.* Memory would be busy in representing and reknowing the individual objects of sense and consciousness, and in recalling the scanty pictures of the sense-fettered imagination, and the unrecognized images of phantasy, its fleeting shadows of forgotten experiences, would unbidden throng the vacant mind. Human language would be almost wholly limited to the few vocal and visual signs which instinct marvelously interprets. The sentence, if not the word, would be impossible. Man's knowledge would be original, but in fragments.

The Thought Power.

The human soul is further endowed with the power to form *general* concepts and ideas, and to apply them in a great variety of intellectual acts and processes. It compares known objects and discerns their likenesses and their differences. It forms general concepts to represent like objects, and then under these concepts arranges them in classes. It discerns the qualities and relations of objects, material and spiritual, and affirms these qualities and relations as facts. It sees in like particular facts the general fact that includes them. It passes from general facts to principles, and from these to laws. It discovers causes from effects, and infers effects from causes. It forecasts what will occur by rightly interpreting what has occurred. It explains events by referring them to the

discovered laws of nature or of necessity. It sees in the phenomena of spirit the attributes and laws of spirit, and reads in the adaptations of created things the designs of the Creator.

Thinking and Thought. These various intellectual acts are called *thinking;* and the resulting products, *thoughts.* The power to think is called the thought power, or, more briefly, *Thought.** Thought may be defined as *the power of the soul to form and rationally apply general conceptions.* General conceptions, as here used, include not only general concepts (see below), but inductions and all other mental products formed by generalization.

Conception.

General Concepts. The simplest act of thinking is the forming of the general concept, or notion, which represents a class of objects; and the simplest of these general concepts are those which represent classes of material objects; as, tree, fence, peach, bird, etc. These class concepts represent what is common or general to all the objects of the class, and hence they are called *general concepts.*

Acts involved. The process of forming a general concept includes comparison and discrimination, analysis, abstraction, synthesis, and generalization. This may be shown by an analysis of the process of

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*This power is designated by various appellations, as the *understanding*, the *intelligence*, the *reason*, the *rational faculty*, the *reflective faculty*, the *elaborative faculty*, etc. The author prefers the appellation Thought Power, or *Thought*, used by Dr. Noah Porter. The objection that the term thought is used to designate the power, the act, and the product, is not serious, since the word is used in literature in these three senses.

forming the general concept *tree*. The mind perceives a tree, forming an image of it, or sense-concept; it sees another tree, forming an image of it, and it sees other trees, forming images of them. At some point in the forming of these individual images, the mind *compares* the objects and sees that they are like or different. It *analyzes* the images, noting their common elements, and *abstracts* each, that is, thinks of each apart from the other elements. It then *synthesizes* these common elements into a new whole or concept and generalizes it, that is, thinks it as the general representative of all the objects considered.

It is not meant that these several acts or steps necessarily occur in the exact order indicated, nor that they are clearly separable in consciousness. It is also noted that since individual sense-concepts contain intuitions and thought elements, as well as percepts (p. 47), the general concept also contains these elements.

Appellation.

Since all of these several acts assist in the forming of the general concept, the entire process is called *generalization;* and, to distinguish it from other thought generalizations (hereafter considered), it is called *Conceptive Generalization*, or, more briefly, *Conception.* Conception is the primary act of thinking.

General Ideas.

Percepts may be generalized, as well as concepts, and by a similar process. A percept may be abstracted from individual concepts, or from the general concept that represents such concepts, and it is then ideated (p. 46), and becomes an *abstract idea.* If this abstract idea be thought of as representing a common attribute of several objects, it is

generalized and becomes a *general abstract idea.* All our ideas of psychical phenomena thus pass from the particular to the general; and, as a result, we have such general ideas as love, fear, hope, faith, purpose, choice, etc.

General Concepts and Ideas.

The distinction between a general concept and a general idea, as used in this analysis, is that the former is *compound* and the latter *simple.* The general concept is composed of several elements, and is the product of a synthetic act; the general idea consists of but one element, the product of a single act, and hence there is no synthesis in its generalization.*

It will be observed that general concepts and general ideas are not the products of direct perception or knowing, as presentative products are, but they are formed from particular concepts and ideas by generalizing their common elements. The general is reached through the particular *by thinking.*

Concrete and Abstract.

All general concepts are in reality abstract, but in their applications they may be considered as *concrete* or *abstract.* When a concept is applied to a class of material objects, it is concrete; when it represents a purely ideal or thought object, it is abstract. *Man* is concrete; *manhood* is abstract. *Human being* is concrete; *humanity* is abstract. No general concept can be imaged, but every concrete general concept may be thought into an individual

* General ideas, as here defined, are also called *simple concepts;* but it is believed to be better to apply the term general concept to the compound product, and general idea to the simple, though this may seem a somewhat arbitrary distinction.

concept, and thus imaged, the imaged concept representing an individual object.*

The individual objects which a general concept represents, may be arranged under it as a group or class. This process is called *classification*. Objects may also be arranged into classes and sub-classes, the highest class representing the *genus*, and the sub-classes *species*. This process is called *generification*.

Classification.

Concepts and ideas, general and particular, are represented by words which assist the mind in recalling and applying them. To this end, words are invented and associated with concepts and ideas as their *signs*, and, when so associated, the word occasions the recall of the mental product which it represents. When a word is not associated with a concept or idea as its sign, the word has no meaning or import. It is merely a sensuous object—a form or a sound.

Words as Signs.

The essential condition in the use of words as means of communication between different minds, is that the words used by one mind as the signs of concepts or ideas be associated with the same concepts or ideas in the mind receiving them. A word can not convey or transfer a concept or idea

Concepts not Transferred.

* The fact that the general concept can not be imaged has led some to doubt its reality, the doubt being based on the assumption that nothing is real that can not be imaged; but *this very doubt can not be imaged!* The phenomena of consciousness that can not be imaged, are as real and certain as those that can be. The highest and most important verities of which man has knowledge, can not be pictured to the mind's eye.

from one mind to another. Every concept or idea is formed in the mind that possesses it *by the mind's own action.* It is not received; it is produced. A word can only occasion the mind's action; and that it may occasion the recalling of a concept or idea, it must be associated with such concept or idea.

These facts are of great importance in education, and they will be frequently recognized in the principles and methods of teaching presented in the following pages. The supposition that ideas can be transferred by words from one mind to another, as water can be poured from one vessel into another, is the source of much error in teaching.

Words Signs of Individual Objects.

It is worthy of remark that words not only represent general concepts and ideas, but also individual concepts. The so-called proper nouns are names of particular or individual objects—largely the names of persons, places, domestic animals, and other objects, to which man needs to refer in common speech. Few, if any, words represent *particular ideas.* The words that represent the acts and states of the soul, the actions of animals and plants, and the attributes, qualities, and relations of objects, are general. An act or event is represented as particular by connecting with the general word, which expresses it, a proper noun or a phrase containing a proper noun, and then the expression represents a concept. We thus speak of Adam's fall, Abraham's faith, Cataline's defiance, the fall of Babylon, the Harrison campaign, etc. It is obvious that there would be little, if any, use for proper nouns if there were no words expressing general concepts and ideas to use with them.

Judgment.

It has been shown that the forming of the general concept involves the act of comparison. The mind perceives successively that several individual oranges are yellow, and by comparison it discerns that all of the oranges are yellow. This common quality or likeness may be discerned in connection with the oranges, and the result may be expressed by the phrase, "Yellow oranges." But the mind may not only discern the common quality or likeness of the several oranges by comparison, but it may think, or mentally affirm, this quality or likeness of the compared oranges, the result being expressed by the sentence, "These oranges are yellow."

Simple and Formal Judging.

The discerning of a common likeness of several objects by comparison is *judging*, and the resulting mental product is a *judgment*. When the likeness of the compared objects is discerned in connection with the objects, as "yellow oranges," the act is called *simple* or *primary* judging. When the discerned likeness of compared objects is formally thought or affirmed of them, as "These oranges are yellow," the act is called *formal* judging. The affirmance of an attribute of an individual object, as "This orange is yellow," is also formal judging.

Discrimination.

But the comparing of different objects to discern their likenesses also involves the discerning of their differences, or discrimination, otherwise the objects compared would be perceived as one and the same object. It follows that judging involves *discrimination*. (p. 41).

Judgment as a capacity may be defined as *the power of the soul to discern and affirm the likenesses and differences of objects of knowledge.* It may also be defined as the immediate discerning of an attribute or relation as common to all known objects compared.

Judgments. The term judgment is also applied to the product or result of an act of judging. The phrases, "yellow oranges," "red apples," and "crooked lines" express simple judgments; and the sentences, "These oranges are yellow," "These apples are red," and "These lines are crooked," express formal judgments.*

Particular and General. Formal judgments may be classified as *particular* and *general.* When an attribute is affirmed or denied of one or several particular objects, the resulting judgments are particular; and when an attribute is affirmed or denied of all known objects of a class, the judgment is general. "This orange is yellow" and "These oranges are yellow" are particular judgments; "Oranges are yellow" is a general judgment. Every general judgment based immediately on a discerned likeness or difference is limited to the *known* objects of a class, and hence is not universal. The limited general judgment, "Swans are white," is equivalent to "All known swans are white."

Proposition. A formal judgment expressed in words is a *proposition.* Every proposition contains two terms, called subject and predicate. When one of the terms of a proposition is an individual con-

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*Simple or primary judgments are also called *natural* and *psychological,* and formal judgments are called *artificial, secondary, logical,* and *predicative.*

cept, the proposition is *particular*. "Moses was a lawgiver" is a particular proposition. When the terms of a proposition are both general concepts, or a general concept and an idea, the proposition is general. "Trees have roots" is a general proposition.

Facts.

A true judgment is a *fact*. Facts, like judgments, are classified as particular and general. The sentences, "The birds flew away," "The child is blind," "These flowers are withered," express particular facts. The sentences, "Trees have roots," "Roses are fragrant," express general facts. It should be added that all general facts are not facts of judgment, in the sense in which judgment is here used. There are also facts of inference or reason, the same being not only general, but universal (p. 70). Universal truths are sometimes called facts of *mediate* judgment.

The Sentence.

It is seen from the above analysis that the judgment is the source of the *sentence* in language. Conception gives concepts, which are represented by words. The formal judgment compares concepts, or concepts and ideas, or ideas; and the discerned relation is expressed by the sentence.

THE REASON.

Our analysis now reaches the last and the highest power of the human intellect; viz, the power which discerns in what is known of several objects of a class what is true of all objects of this class, known and unknown, thus passing from the facts of observation and judgment to general facts more comprehensive

and universal; the power which also discerns in a general fact the validity of all included facts, thus descending from a knowledge of general and universal truths to a knowledge of particular facts. This marvelous power is called the *Reason*. It may be defined as *the power of the soul that passes from particular facts as reasons to a general fact, or from a general fact to the included particular facts.*

Reason Defined.

As above indicated, there are two kinds or processes of reasoning; to wit, (1) the reasoning from particular facts to a general fact, called *induction*, and (2) the reasoning from a general fact to particular facts, called *deduction*.

Kinds of Reasoning.

INDUCTION.

It has been shown that a general judgment is really limited to known objects, and hence is not a universal truth. But the mind is endowed with the power and tendency to pass from the facts of observation and judgment, limited to known objects, to those universal facts which include not only known objects, but related unknown objects, and this is done when the mind sees in the known and limited a ground or *reason* for inferring the universal. The act of discerning in the known and limited a reason and so inferring the universal, is called *induction*, and the same term is applied to the act or process and the result.

The distinction between immediate judgment and induction may be made clear by a single example. I have seen several elephants, and have observed that each one has a proboscis or trunk. I generalize these particular observations into the fact, *all these elephants*

have trunks. This is an immediate judgment, and includes only known elephants. If I now enlarge this judgment by the inference that what I have observed to be true of the known elephants must be true of all elephants, I reach the general fact, *all elephants have trunks.* This is an induction, and it includes all elephants, known and unknown. It is thus seen that the general judgment is limited; the induction, universal.

Judging and Induction.

In judging, the mind immediately discerns an attribute or relation as common to all known objects compared, but what is the ground and nature of the process called induction? How does the mind pass with confident step from what is true of known objects to the inference that the same is true of all objects of the class, known and unknown? This question can be best answered by a few illustrations.

Ground of Induction.

Let us begin with the one already used. I have seen, say ten, elephants, and have observed that each has a trunk, and, with confidence, I make the induction, *all elephants have trunks.* Why? I have seen, say ten, deer, and have observed that each one has antlers or horns, but I hesitate to make the induction, *all deer have horns.* Why? Why do I make the induction confidently in the first case, and not in the second?

Illustrations.

In the case of the elephants, I observe that each animal has long legs and a very short neck, and in these and other observed attributes I see that the elephant's trunk is a necessary means for its obtaining food and drink. I thus discern in the nature of the elephant a sufficient *reason* for the induction that

all elephants have trunks. In the case of the deer, I do not observe that the horns are necessary means to obtain either food or drink, and, since the deer is one of the fleetest of animals, I do not see the necessity of its horns as a means of defense. Hence I do not discern in the fact that all the ten known deer have horns, or in any other observed facts, a sufficient *reason* for the induction that all deer have horns. My hesitancy to make such an inference may be strengthened by the observed fact that all the deer which I have seen are male, not a female deer being included.

Another Illustration. Let us take one more illustration. I am shown several triangles drawn on paper, and I observe that each triangle has three sides. I, however, hesitate to make the induction that all triangles have three sides until I see that what is true in this respect of the triangles observed must be true of any triangle, that the fact of three angles *necessitates* the fact of three sides. When I discern this necessary relation between the number of angles and the number of sides of a triangle, I make the certain induction that *all triangles have three sides.*

The Reason. It is thus seen that the ground on which the mind certainly infers that what is true of known objects is also true of unknown like objects, is the discernment of a *cause* or *reason* for what is true of the known. The fact that a score or more of known elephants, without exception, have trunks, would be no valid ground for the induction that all elephants have trunks, if the mind did not discern the necessary adaptation of the elephant's trunk to its nature and existence.

The validity of an induction depends *on the validity of the reason on which it is made.* When the discerned reason of the inference is a necessity of nature or thought, an induction is certain knowledge. The claim that we do not know the unobserved facts included in a certain induction, is playing with the word know. We know any thing when we are *certain* that it is (p. 35), and the knowledge gained by induction may be even more certain than some knowledge gained by observation.

Validity of Induction.

It is also to be observed that while all immediate judgments, simple or formal, are limited by observation and experience, the inductions of reason transcend both observation and experience (as usually understood), and rest in those necessary truths which the mind intuitively apprehends, including the necessary relations of time, space, substance and attribute, cause and effect, means and end, adaptation, design, etc. It is thus seen that in the final analysis, the validity of the true inductions of reason depends on the certainty of the mind's direct apprehension of the necessary relations of the objects of knowledge.

Basis of Induction.

In inductive reasoning, the mind may proceed on the assumption that what is true of known objects must be true of all objects like them—that an observed similarity of known objects is a universal attribute of all like objects. This is called reasoning *from analogy*, and it is the source of much error. A person who has seen only white sheep, infers that all sheep are white. A traveler who has personally met only dishonest Arabs in a journey,

Analogy.

infers that all Arabs are dishonest. These and similar inferences are not inductions proper, since the mind does not discern in the observed facts a *reason* that necessitates or justifies the inference. The only valid reason for such an induction is the discerned fact that the observed similarity is an essential attribute of the known objects. When this reason is not clearly discerned, the induction is at best only a *probable inference.* It sometimes happens that the indications interpreted are only incidental concomitants, and then the induction is not even a probable truth.

Probable Inference.

A serious error in reasoning often arises from the fact that when two events are coincident or occur in succession, the one is taken to be a cause and the other an effect. A farmer, for example, sows his seed for several years in a certain phase of the moon, and has good crops, and, supposing that the moon has been the cause and the good crops the effect, he infers that this phase of the moon is the only proper time for sowing such seed.

Coincidences.

The inductions of common life are often based on incidental and superficial indications, and the tendency to hasty inferences leads to much error in belief and conduct. This tendency is often aggravated by self-interest and prejudice. It is an important function of school education to correct this tendency by training the mind increasingly in the art of inductive reasoning.

Common Inductions.

It is believed that most of the apparent inductions of young children are only general judgments broadly stated, and that most of their inductions are the

uncertain inferences of analogy. It remains, however, true that children make real inductions at an early age, much earlier than certain theorists suppose (p. 91).

Deduction.

Deductive reasoning is the inverse of induction. When we reason from the fact that every known wood is combustible to the general fact that all wood is combustible, we are reasoning by induction; but when we reason from the general fact that all wood is combustible to the fact that a particular wood, as lignum-vitæ, is combustible, we are reasoning by deduction.

The following examples clearly illustrate deductive reasoning:

All magnets attract iron; this bar of steel is a magnet; hence it will attract this iron nail.

All iron is attracted by a magnet; this piece of metal is not attracted by a magnet; therefore it is not iron.

All pure alcohol will burn; this liquid will not burn; hence it is not pure alcohol.

All acid solutions change litmus-paper red; this solution does not change this litmus-paper red; hence it is not an acid solution.

All men are mortal; Moses was a man; therefore Moses was mortal.

The Syllogism.

It will be observed that each of the above examples of deductive reasoning consists of three propositions; to wit, a general proposition and two particular propositions, one being the inference

or conclusion. This form of deductive reasoning is called the *Syllogism.*

Premises and Conclusion.

A syllogism consists of three propositions. The first or general proposition is called the *Major Premise;* the second, the *Minor Premise;* and the third, the *Conclusion.* In the last of the above syllogisms, "All men are mortal" is the major premise; "Moses was a man," the minor premise; and "Moses was mortal," the conclusion.

Middle Term.

It is also to be noted that while each of the propositions of a syllogism contains two terms (p. 68), the three propositions together contain only *three* different terms. The major and minor premises of every true syllogism contain a common term, called the *middle term,* and their two other terms are embodied in the conclusion. The necessity of a middle term in every syllogism often assists in the detection of a fallacy in syllogistic reasoning.

The Enthymeme.

It is not always necessary in deductive reasoning to state both of the premises. One premise may be so obvious as not to need formal expression. In the example, "Moses was a man, and hence he was mortal," the omitted major premise, "All men are mortal," is obvious and readily supplied. In the example, "All men are mortal, and hence Moses was mortal," it is assumed that Moses was a man. A syllogism thus abridged by the omission of one of its premises, is called an *Enthymeme.*

Rules of Deduction.

Various rules or dicta have been given for testing the validity of a syllogism, as the principles of *identity,* of *contradiction,* and the *excluded middle,* but these tests do not constitute the *reason* for

the inference or conclusion. The mind may reason deductively with accuracy in utter ignorance of the syllogism as such, as well as of all the rules by which its validity can be tested.

The Reason.

What is the nature of the *reason* that guides the mind from premises to conclusion? It has been shown that the mind never infers with certainty a general truth from particular facts until it discerns in the particular facts a sufficient reason for such inference (p. 72). This sufficient reason may be a discerned necessity of nature or of thought, including such necessary relations as cause and effect, means and end, substance and attribute, adaptation, etc. This discerned reason for the induction of a general truth from known particular facts constitutes the ground or reason for the deduction of a particular fact from a general truth. The mind discerns in the general truth the *sufficient reason* for inferring the particular fact.

This is made clear by the following illustration:

All material bodies are attracted towards the earth's center; this thistle-down is a material body: hence this thistle-down, which is now rising in the air, is attracted towards the earth's center.

What is the ground or reason of this particular inference in the face of the evidence of the sense of sight? Let us precede this question by another; to wit, What reason enabled the mind to pass from a comparatively few observed facts of attraction to the general induction, "All material bodies are attracted towards the earth's center?" The sufficient reason for this induction is the belief that attraction is an essential property of matter, an energy abiding in its

essence, and thus the mind discerns in observed phenomena of attraction a cause (*ratio essendi*) which necessitates the inference that all material bodies are attracted towards the earth's center. It is this same discerned cause in the major premise that becomes the *sufficient reason* for the deduction of the particular fact that the floating thistle-down is actually attracted towards the earth's center.

In what are called mathematical and logical deductions, this sufficient reason is a necessary space or time relation or a thought relation. In all deductive reasoning, it is the discerned necessary relation of this reason and conclusion that gives convincing force to the argument.

Induction and Deduction.

It is thus seen that there is a very close relation between inductive and deductive reasoning. In all probable reasoning, induction establishes the truth of the major premise of the deductive syllogism, and either induction or formal judgment furnishes the minor premise. The validity of the conclusion depends on the validity of the premises. If either premise is only a probable truth, the conclusion will be only a probable truth. Deductive reasoning also assists in induction, and the two processes are generally more or less blended in all rational thought.

Relation of the Thought Processes.

It is also seen that both inductive and deductive reasoning depend on conception and judgment. Conception furnishes the general concepts and ideas which formal judgment compares in its propositions, and both inductive and deductive reasoning use propositions. Judgment com-

pares concepts and ideas; reason compares propositions or judgments. Another distinction between judging and reasoning is that the former is direct and immediate, and the latter indirect and mediate—observed facts and necessary truths being the *media* by which the reason reaches its conclusions. Reasoning is sometimes called *mediate* judging, or judging by inference.

Value of Deductive Reasoning.

The question may be raised whether deductive reasoning adds to man's knowledge, since the major premise really includes the conclusion. It is important to make a distinction between the fact that the major premise includes the conclusion and our *prior* knowledge of this fact. It is this very fact which the deduction (if real) discloses. When, for example, we see the thistle-down rising from the earth, we may not know that it is attracted toward the earth until we apply to it the general fact that all material bodies are thus attracted. Moreover, neither the person who frames a deductive argument, nor those to whom it is addressed, may have established the major premise by induction. This may be accepted as the induction of another mind, and, the reason being discerned, it may be confidently applied to objects beyond personal observation, or used to explain observed phenomena. Man's knowledge is thus widened and increased.

Eye of Reason.

Attention has been called to the fact that in observation the mind perceives and knows much more than the senses disclose (p. 48), and it may now be added that the eye of reason sees truth that lies far beyond the ken of sense. Observation

sees only the present phenomena of nature, but thought interprets observed phenomena and discerns nature's marvelous truths, forces, and laws.

SCIENTIFIC THOUGHT.

Reference has been made to the tendency of the mind to pass from the facts of judgment, limited to known objects, to universal facts. Conception takes the individual concepts of sense and experience, and forms general concepts, under which objects are classified. Judgment discerns and affirms the common attributes of objects and the similarity or difference of concepts, thus furnishing facts, particular and general (limited). Reason interprets these facts of judgment, and by induction reaches universal facts that comprehend and explain them. When such a universal fact is reached and the included facts are arranged under it, the result is *Science; i. e.*, knowledge reduced to system. It is thus seen that there may be as many sciences as there are universal facts under which the related knowledge may be classified and arranged.

Scientific and Common Thought.

It is true that observation and the several thought powers have each what may properly be called a scientific phase of activity, possible only to the developed and trained intellect and will. In common observation the mind perceives only the more obvious qualities and relations of objects, and the resulting concepts are the basis of the facts of common knowledge. In its scientific phase, observation discriminates more keenly and perceives the less obvious, but often more important,

attributes of objects, and the resulting sharply defined concepts are the basis of scientific facts. The elementary inductions of science differ from the inductions of common thought—of common sense, if this be clearer—chiefly in the degree of acuteness and energy of the reasoning power required. Scientific thought is characterized by closer observation, wider comparison, and sharper analysis in conception, more accurate judging, and more careful induction, than common thought.

It is, however, to be observed that these two phases of thought involve the same processes and the activity of the same mental powers.* This fact is made evident, if we compare the mental processes involved in the concepts, facts, inductions, and classifications which make up a common knowledge of plants, with those involved in the scientific concepts, facts, inductions, and classifications included in the science of botany.

It is also true that no clear distinction can be made between common knowledge and scientific knowledge. The one blends into the other. The more sharply defined facts relating to the earth's surface, to climate, day and night, etc., gained by common observation and thought, are the elements of the science of geography.

Science.

But the elementary facts of science do not constitute science. What is further needed is that deeper insight of the reason which can discern those universal facts and principles that comprehend and explain all related knowledge, thus determining and making possible its orderly classification and systematic arrangement.

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*See Porter's "Human Intellect," § 435.

But human reason does not stop with the general facts of induction that make science possible, but it seeks to go back to those causative energies and controlling laws that produce and explain all events and phenomena. When such a causative and controlling principle is discerned, the highest phase of scientific thought is reached, and the result is *philosophy*, which Fichte properly calls "the science of science." The highest aim of philosophy, and consequently of human reason, is to discern the ultimate, self-determining principle of the universe. This aim Agassiz realized when he saw in science an "interpretation of the thoughts of the Creator;" and Kepler, when he devoutly exclaimed, "O God! I think thy thoughts after thee!"

Philosophy.

THE INTELLECT—ITS POWERS.

- I Presentative.
  - 1 Consciousness.
  - 2. Sense-perception.
    - 1. Physical Conditions.
      - 1. Material object—excitant or stimulus.
      - 2. Sensorium.
      - 3. Sensorial excitement.
    - 2. Psychical Elements.
      - 1. The Sensation. } Conscious sensation.
      - 2. Its Perception. } Conscious sensation.
      - 3. Perception of material object.
    - 3. Classes or Kinds.
      - 1. Original.
      - 2. Acquired.
  - 3. Intuition.
  - Presentative Products.
    - 1. Of consciousness and intuition, *ideas*.
    - 2. Of sense-perception, *percepts* and *concepts* (individual).
- II. Representative.
  - 1. Simple Representation—Phantasy.
  - 2. Memory.
    - 1. Elements.
      - 1. Representation.
      - 2. Recognition.
    - 2. Kinds.
      - 1. Spontaneous.
      - 2. Intentional.
  - 3. Imagination.
    - 1. Nature.
    - 2. Phases.
      - 1. Modifying.
      - 2. Constructive (*school phase*).
      - 3. Creative.
- III. Thought.
  - 1. Conception.
    - 1 Elements. Comparison, analysis, abstraction, synthesis, and generalization.
    - 2. Product—general concept (*word*).
  - 2. Judgment.
    - 1. Kinds.
      - 1. Simple.
      - 2. Formal.
    - 2. Product of formal—thought or fact (*sentence*).
  - 3. Reason.
    - 1. Kinds.
      - 1. Inductive.
        - 1. Nature—particulars to generals.
        - 2. Kinds.
          - 1. Induction proper.
          - 2. Analogy.
        - 3. Product—universal truth.
      - 2. Deductive.
        - 1. Nature—generals to particulars.
        - 2. Forms—syllogism, enthymeme.
    - 2. Value.
  - Scientific Thought.
    - 1. Science.
    - 2. Philosophy.

ACTIVITY AND GROWTH OF MENTAL POWERS.*

Order of Activity. THE foregoing analysis of intellectual processes shows that the presentative power awakens into activity before the representative, and both of these powers before the rational or thought power. This order is a *psychical necessity.* It is impossible for the mind to recall and represent an object not previously known, and it is equally impossible for the mind to form and apply general concepts of any kind if it be not in possession of individual concepts to compare and generalize. The mind's activity in both consciousness and sense-perception must precede memory, and memory must precede conception—the simplest form of thought activity.

How Conditioned. In like manner and for a like reason, the activity of the several powers included in the presentative, representative, or thought powers, and the higher phases of activity of each included power, are *conditioned upon the lower.* Sense-perception is conditioned upon sensation—the primary psychical act—and consciousness is conditioned upon both sensation and sense-perception. The perception of objects, psychical and physical, conditions the intuitive perception of their necessary relations, and, in turn, the intuitions condition the completed act of sense-

*It is to be kept in mind that what is meant by power is the soul's capability to put forth a definite activity. It is not the power that acts, but the soul puts forth its power, and this is its action. The presentative power is the soul's capability to put forth presentative acts.

perception. It is not meant that there is necessarily a conscious interval between these related presentative acts. Consciousness accompanies and blends with the acts and states which it perceives, and the intuitive acts blend with the acts of sense-perception and consciousness.

Activity of Representative Powers.

The activity of the several representative powers is subject to the same condition. Memory is conditioned upon simple representation, and the imagination is conditioned upon both simple representation and memory, since these powers furnish the materials which the imagination modifies, or recombines into new wholes. The higher phases of activity of the imagination are in like manner conditioned upon the lower. It is not easy to determine which of the two modifying phases (p. 56), appears first, since they both appear very early in the child's life, as every nursery clearly shows; but these phases condition the constructive phase, which appears a little later. The constructive imagination is active when a few lines drawn on board or paper enable the child to image a tree, a house, a bird, a person, etc., and especially when the accompanying of the picture with little stories, told in a lively manner, enables the child to put more in his mental image than the picture itself represents or suggests. This is the power that lends such a charm to illustrated nursery books. Still later the child acquires the power to construct or image objects and scenes described in language (first oral, and later written), thus forming notions of objects which it has not seen. Wise oral teaching constantly appeals to the constructive imagination, and the intelligent reading of books containing stories or other

descriptions, calls for its lively exercise. It may be properly characterized as the *school phase* of the imagination. It is soon accompanied by the creative imagination which conceives and constructs new images.

Thought Powers. The same order is observed in the activity of the several thought powers. Conceptive generalization precedes formal judging, and both conception and judging precede reasoning. In other words, reasoning is conditioned upon judging, and judging upon conception.

Order of Development. The order in the activity of the several intellectual powers, above indicated, also prevails in their development. The presentative power reaches what may be called its natural development before the representative power, and both of these before the thought power. The last of the representative powers to reach an activity and energy equal to that of sense-perception is the creative imagination, and the last of the thought powers to reach a like development is reason, the power of deductive reasoning appearing and developing later than inductive.

There are considerable intervals between the periods in which the higher faculties reach a development equal to that of the lower,* but it is an error to infer that there are corresponding intervals between their awakenings to activity. The first conscious acts of perception (outer or inner) and memory accompany each other. The forming of general concepts and ideas is near

* This degree of development may be more clearly expressed by mature development or maturity, but these terms involve the idea of a cessation of growth and even decay.

the synthesis of the related sense-concepts. Formal judgment follows conception closely, and inductive reasoning appears only a little later. The two powers which awaken into activity latest, are the creative imagination and deductive reasoning.

Early Activity.

But how early do the several intellectual powers become active, and what is their relative activity and energy in the successive periods of the child's life? Or, stating these inquiries more accurately, *how early does the soul put forth its several intellectual activities, and what is the relative degree of these activities in the successive periods of the child's life?*

Child Study.

The answers to these important questions can only be determined by the observation and study of children, and, fortunately, this is not a new field of inquiry. No other beings have been so carefully and lovingly observed, and the recorded results, covering centuries, present child life under many and diverse conditions. Most of these observations, however, are not characterized by scientific accuracy, and their records are too widely scattered in literature for easy comparison and study. They need to be supplemented by more accurate observations, and all to be interpreted by the best scientific methods.

This scientific study of children has been greatly stimulated in later years by the writings of Comenius, Locke, Rousseau, Pestalozzi, Froebel, and other educational reformers, and it is now receiving the earnest attention of progressive educators in this country and in Europe. The results of some of the more recent investigations are now accessible.

The study of these results shows that it is not an easy task to determine the psychical condition of a child, and especially of a class of children. Such investigation is rendered difficult by the marvelous power of children to divine what is in the mind of the questioner, and the equally marvelous facility with which they catch and use words, with or without ideas. Their skill in attaching familiar but wrong ideas to *new* words often amounts to an apparent genius for blundering, but to infer from these word blunders that they are ignorant of the things involved, would not unfrequently be a mistake.

Child Study Difficult.

It must also be admitted that there is no little difficulty in applying the general conclusions, reached by a comparison of these results, to individual cases — a fact due to the marked difference in children of the same age, and often in the same family. One child may possess an energy of imagination at six years of age which a brother or a sister may not have at sixteen, and like striking contrasts are observed in the development of the several thought powers, especially of the reason.

Interpretation of Results.

Notwithstanding the difficulties involved in child study, it is believed that the results now recorded indicate with some clearness the psychical activity of children at different ages, and especially when these results are interpreted in the light of general psychology. The direct bearing of these psychical facts on the principles and methods of school education not only justify, but require its clearest possible presentation.

The accompanying diagram (p. 90), represents the

results of the author's study of this problem. It is designed to show the relative energy and activity (more especially the activity) of the several intellectual powers of the *average child* from birth to twenty years of age; and it is unnecessary to add that, like all graphic devices, it represents the facts only *approximately*.

Order of Activity.

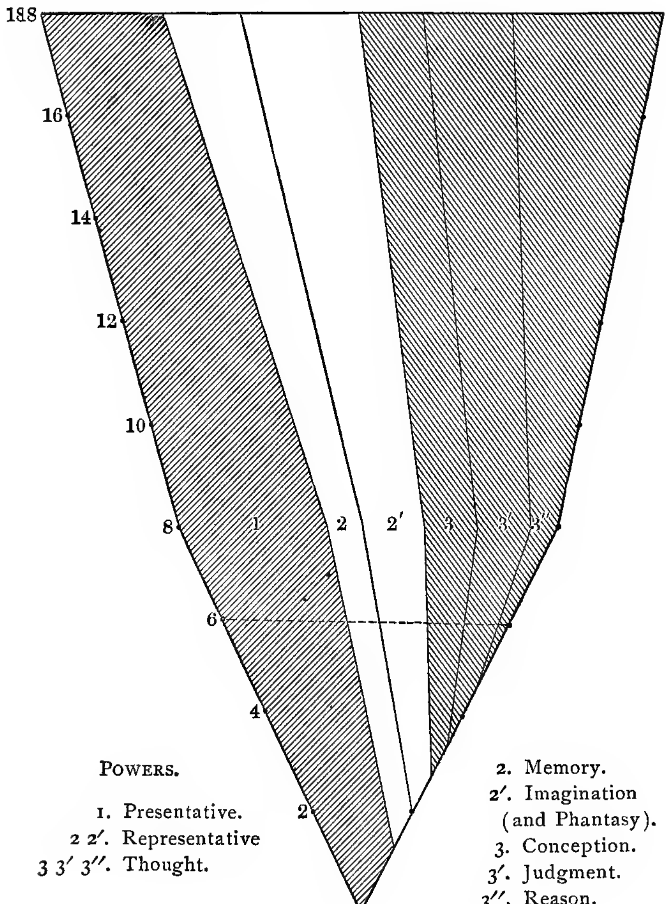
The diagram shows that the presentative, representative, and thought powers successively awaken to activity between birth and two to three years of age, and that the nine intellectual powers are all active at six years of age. The three presentative powers begin their activity so closely together (p. 85) that no attempt is made to indicate in the diagram their successive or separate activity and development. Their activity and growth concur and blend together.

The diagram also shows that memory is active but little later than perception, and that imagination (modifying phase) begins activity as early as two years of age, and conception but little later. The judgment or fact power appears as early as three, and inductive reasoning (chiefly from analogy) as early as five. No attempt is made to show the activity of the successive phases of the imagination, but it is believed that neither the creative imagination nor deductive reasoning appears usually much earlier than seven or eight years of age.

Relative Activity.

The diagram further shows that while there is a continuous development of the intellect as a whole, there is a marked difference in the relative activity and energy of the several faculties at different ages. The perceptive powers are most

Activity of Mental Powers.



Powers.

1. Presentative.
2 2′. Representative
3 3′ 3″. Thought.

2. Memory.
2′. Imagination (and Phantasy).
3. Conception.
3′. Judgment.
3″. Reason.

active from birth to ten years of age, reaching their normal activity at eight to ten, while the representative and thought powers, which are comparatively feeble at six, become the leading powers from fourteen to eighteen. It is not meant that the strength or energy of the perceptive power lessens after eight years of age, but that its *activity* becomes less and less, owing to the increasing time given to representative and thought activities. It is to be kept in mind that the diagram primarily represents the *relative activity* of the several intellectual powers.

Thought Powers.

It will be observed that there is a marked difference in the relative activity of the thought powers at different ages. The conceptive power is most active from three to ten—the *word* learning period of child life. Judgment increases steadily in activity after its awakening, at about three years of age, and the reasoning power, whose activity is but a trace at six, becomes the leading thought power at sixteen. The power of inductive reasoning follows closely the ability to judge or reason by analogy, and later and increasingly the power of deductive reasoning is active.

How Early Children Reason.

In their earlier thought activity, children form concepts and acquire facts which involve the more obvious qualities and relations of common objects—the concepts and facts of child observation and experience; and they reach one by one the simpler inductions of common knowledge, chiefly at first the easy inductions of analogy. It is doubtless true that many of the first apparent inductions of children are formal judgments only, and as such are

limited to known objects; but it is an error to suppose that children do not truly reason before ten years of age. Locke held that children reason as early as they understand language, and he adds, "if I misobserve not, they love to be treated as rational creatures sooner than is imagined."

When a child asks for the why or reason of things that interest him, the reasoning power is active. A bright child makes many inductions before he is six years of age, and often acts upon them intelligently. Ask a bright lad, in his sixth year, why dogs can not fly, why children can slide on ice, why people wear thicker clothes in winter than in summer, why a stone will fall if dropped, and he will give reasons, though, perhaps, not scientific ones.

It seems important to note in this connection that the development of the intellectual faculties is conditioned upon the corresponding development of the sensibility and the will. The activity of the mind in knowing depends, among other things, on the acuteness and energy of the senses, the intensity of the emotions and desires, and the energy and constancy of the will. In childhood the development of all the psychical powers depends much on the growth of the body. Attention, which is primarily an act of the will, depends not only on interest excited by feeling, but also on the sustaining power of the body, and this, other conditions being favorable, increases as children grow older. The young child can attend to any one object a much shorter time than an adult, and the same is true of the relative duration of all psychical activities.

Bodily Conditions.

It is not meant that the development and energy of the psychical powers are determined by or necessarily keep pace with the growth of the body. The growth of the mind may lag far behind, or may greatly exceed that of the body. Primarily the development of all man's powers, physical and psychical, depends on their normal and harmonious exercise. If the mind be not properly exercised with the bodily powers, its development will be comparatively slow and its energy feeble. On the other hand, while mere animal activity may secure the growth and health of the body, the skillful activity of the bodily powers depends on the supporting energy and activity of the psychical powers. The seeing of the eye, the hearing of the ear, and the deftness of the hand all depend on the energizing and directing activity of the intellect, the sensibility, and the will. There is a general law of interdependence and interaction that runs through all human powers and activities.

Mutual Dependence.

PRINCIPLES OF TEACHING.

PRINCIPLES OF TEACHING.

ENDS AND MEANS.

THE one comprehensive end of education is *to prepare man to fulfill the purposes of human existence*; *i. e.*, TO LIVE COMPLETELY. These purposes include the perfection of man's nature for his highest well-being and happiness, and his preparation for the right discharge of all the obligations and duties which spring from his relations to his fellows, to society, to the state, and to God. It is obvious that this comprehensive end is not met by training man to be an artisan, a merchant, a soldier, or even a citizen as such. The purposes of a complete life touch all the relations of man *as man*, and hence tax all his powers and activities.

Ends of Education.

It follows that the means to this comprehensive end of education include (1) the development and training of all man's powers, psychical and physical; (2) the acquisition of knowledge needed for guidance, growth, and enjoyment; and (3) the acquisition of skill in the application of power and knowledge to the purposes of life. These three important means—power, knowledge, and skill—may be considered the *immediate ends* of education. They include

Means.

(1) the developing and training of the powers of the intellect and the acquisition of knowledge, or *intellectual education;* (2) the developing and training of the higher sensibility and the will, or *moral education;* and (3) the development and training of the bodily powers, or *physical education.*

In practice these three kinds of education can not be wholly separated. Intellectual education is conditioned upon moral education and, to some extent, on physical; and moral education depends on the intellect for knowledge and insights and for some of its highest motives. In studying the principles of teaching there is, however, an advantage in giving attention successively to these different kinds or phases of training, and, for this reason, we shall first study teaching as a means of intellectual education.

Ends of Teaching. The three immediate ends of education—power, knowledge, and skill—constitute the three ends of teaching, and since the acquiring of knowledge is the means of increasing the power to acquire knowledge (p. 50), we may, for our present purpose, consider *knowledge* the first end of teaching, *power* the second end, and *skill* the third.

Knowledge. Knowledge as an end of teaching includes (1) *original* knowledge, or knowledge obtained directly by observation and thought; and (2) *recorded* knowledge, or knowledge expressed or recorded in language, as in books; also acquired by the learner's own activity (p. 111).

Power is inherent or developed ability for action, intellectual, moral, and physical. The term is used in these pages in the active sense of capability for

self-activity, or for activity when called forth, and also in the more passive sense of capacity to receive or resist, but usually in the active sense of capability. When inherent power is changed in mode or direction of activity it is called *acquired* power. The power of the soul to know is called *intellectual* power.

Power.

Intellectual power, as an end of teaching, includes (1) the power to acquire original knowledge; (2) the power to acquire recorded or expressed knowledge; (3) the power to express knowledge in language, oral and written; and (4) the power to apply or use knowledge, the last two including skill.

Skill is power guided by knowledge and made ready and facile by practice. Skill is the art phase of power, and includes readiness and facility in action. The term power is used to denote ability when skill is either wanting or not prominent, and the term skill is applied to ability when skill is a prominent element; and this distinction is believed to be sufficiently clear to justify the use of power and skill as separate terms.* It is of great practical importance in school education.

Skill.

Skill as a distinct end of teaching in elementary schools has more special reference to readiness and facility in *the fundamental arts of reading*, *writing*, *language* (oral and written), *numbers*, *drawing*, *singing*, *health*, and *behavior*. These arts

Fundamental Arts.

N. B. For the meaning of *education*, *teaching*, *instruction*, *training*, *learning*, *study*, and *method*, see pp. 134–137, where they are defined in the clear light of previous study and with more special reference to methods.

are not only fundamental in education, but also in practical life. Skill also has reference to readiness and facility in all mental processes, whether involving the senses, or the powers of memory, imagination, and thought.

Teaching an Art. It is assumed in this study of teaching that it is an *art*, and as such has its underlying principles which determine its methods. There can be no art, in the true sense of the term, in the absence of guiding principles, and this is especially true of teaching. The human soul can not be unfolded and furnished by pattern. The laws which govern the activity and growth of its powers must guide in their training. The teacher must be an artist, and the teacher of a child the artist of artists.

PRINCIPLES.

We are now prepared to consider teaching in the light of the facts of psychology, previously stated. These facts clearly disclose the following fundamental principles—the most important that underlie and guide the teacher's art.

PRINCIPLE I.

Teaching, both in matter and method, must be adapted to the capability of the taught.

This is a fundamental axiom of teaching, requiring neither proof nor elucidation. The most primary conception of education makes evident the truth that the *what* and the *how* of teaching must be adapted to the capability of the pupil. This principle is fundamental,

since all other principles are based upon it, and it will be seen that all others are in harmony with it.

The application of this principle to school instruction raises two important psychical questions; to wit:

1. Do the pupils in the schools present a varying capability as they pass up through successive grades?

2. If so, in what respects does their capability vary, and to what is this variation due?

The varying capability of pupils as they pass from the primary to the higher grades is an obvious fact—too obvious to require proof; and so we may pass at once to the consideration of the second question, the most important and fruitful question which pedagogy is called upon to answer. Let us first narrow the question to the variation in the intellectual capability of pupils.

This varying capability of pupils in the successive grades must be due to one or more of three psychical facts; to wit:

1. A variation in the activity and energy of the mind *as a whole; i. e.*, of all its powers.

2. The *absence* or *non-activity* of certain powers of the mind in the younger pupils, and the successive awakening of these powers to activity as pupils grow older.

3. A variation in the *relative* activity and energy of the several mental powers at different ages.

First Theory.

The first of these supposed facts is the basis of the theory that primary pupils may be taught the same kinds of knowledge as the pupils in the higher grades, and by essentially the same methods, the only radical difference between primary

and advanced instruction being in the amount of knowledge taught, the former covering daily less ground than the latter. Forty years ago, and even later, elementary text-books were constructed on this theory. The earlier elementary arithmetics began with formal definitions, and rules preceded the problems which were solved "according to rule." The primary geographies began with the same definitions as the more advanced treatises, even including mathematical definitions, and otherwise covered substantially the same ground. The only essential difference between the elementary and the higher books in all branches was the fact that the former were thinner than the latter.

The second of the above suppositions, in its more extreme interpretation, assumes that the mental pow-

Second Theory.

ers active in primary pupils are the presentative, especially the power of observation; that later in school life the representative powers, including memory and imagination, become active; and still later the thought powers, generalization and reasoning. It cuts school life into three distinct psychical stages or periods, presentative, representative, and thought, and is the basis of the theory that a course of school instruction may be cut horizontally into three distinct sections or periods, the lower including sense or perceptive knowledge, the intermediate reproductive knowledge, and the higher or advanced generalized and rational knowledge. These three periods of school instruction have been respectively designated as perceptive, conceptive, and rational; also as objective, reproductive, and elaborative.

The third supposition assumes that all the intellectual powers are active when the child enters school at

six years of age, and that his intellectual condition as he advances in the course is characterized by changes in the *relative activity* of the several powers. This view supports the theory that both the matter and the method of school instruction should correspondingly change from year to year,—the successive phases of instruction being characterized by the *relative attention* given to the different kinds of knowledge, but, more especially, by *the method in which such knowledge is taught.*

Third Theory.

Which of these suppositions is true?

This question has been fully answered in the preceding discussion of the activity and growth of the mental powers (p. 84). It is there shown that the nine intellectual powers are all active (though not equally so) at six years of age; that the child's intellectual condition the first years of school life is characterized by the activity of sense-perception or observation, constructive imagination, and conceptive generalization (word power), sense-perception being the leading activity; that later the imagination, judgment (fact power), and inductive reasoning become more active, and characterize intellectual activity; and that the next or higher phase of development is characterized by the activity of the creative imagination, and the reason, inductive and deductive. There is a marked change in the relative activity of the three thought powers, conception, judgment, and reason, the first being the leading thought activity at six and the last at sixteen.

True Theory.

In these changes in the relative activity of the different powers, there are no awakenings of new powers

and no sudden transitions. The presentative powers are at first the most active, but the thought powers increase in activity and energy from year to year until they become the leading powers of the intellect. It is true that there is a steady increase in the activity and energy of the mind as a whole, but the characteristic feature of its development is *the variation in the relative activity of the several intellectual powers*.

We are now prepared to state and consider a second principle of teaching.

PRINCIPLE II.

There is a natural order in which the powers of the mind should be exercised, and the corresponding kinds of knowledge taught.

The natural order in which the mental powers should be exercised is the same as the order of their activity; to wit: first, the presentative; second, the representative; and, third, the thought power. The natural order of exercising the thought powers is, first, conception; second, judgment (formal); and, third, reason, first induction and later deduction. This is not only the natural but the necessary order of intellectual activity in childhood (p. 84). The natural movement of the mind in the earlier processes of knowing is from perception through representation to conception, and from conception through judgment to reason—that is, *from sense activity to reasoning through the activity of the intermediate powers*.

Elementary Maxims.

This principle has been specialized in the form of *maxims* of elementary teaching, including the following:

1. *Observation before reasoning.*

2. *The concrete before the abstract: sense knowledge before thought knowledge.*

3. *Facts before definitions or principles.*

4. *Processes before rules.*

5. *From the particular to the general.*

6. *From the simple to the complex.*

7. *From the known to the related unknown.*

Limitations.

These maxims relate to that phase of the process of knowing in which the mind is acquiring primary concepts and ideas, elementary facts, and simple inductions, as a preparation for the acquisition of higher or scientific knowledge. They are maxims of *elementary* teaching, and not universal principles. The maxim, "Processes before rules," is, for example, an important precept in the teaching of elementary arithmetic, but no wise teacher would uniformly or generally follow it in teaching the higher mathematics, and it has its exceptions in teaching the higher applications of arithmetic. The same limitation specially applies to the maxims, "The concrete before the abstract," and "From the particular to the general." In the higher phases of instruction the true order is often from the abstract to the concrete, and from the general to the particular, this being always true in deductive processes (p. 75).

It is, however, to be observed that this inverse order is only possible when the mind is in possession of those primary concepts, ideas, and facts which are essential to the apprehension of the abstract and the general, and hence the above maxims are true directions for the teaching of the *elements* of all branches of knowledge, especially of all inductive branches;

but they have more special application to elementary schools. They are the criteria which differentiate an elementary method of teaching from a general method.

Intervals.

The observing of this natural order in school training does not imply that there should be long or even distinct intervals between observation and reasoning, or between any lower activity and the related higher. The successive steps by which objective, concrete, and abstract or general knowledge are acquired, may be taken the same school term and even in the same lesson. The principle does, however, imply that *the several mental powers are best developed and trained by observing their natural and harmonious activity.* The child must observe as a child, must think as a child, must reason as a child *in his psychical condition,* and the fact is to be kept in mind that a child acquires even primary knowledge very slowly. Any attempt to force the young mind to do what it has not the energy or the preparation to do, is to weaken it. There is, however, danger of falling into an opposite error, and limiting the mind to one kind of activity when it is prepared and has a natural impulse for a higher activity. Children may be kept swinging on the gate of sense when they are fully prepared to make easy and fruitful excursions into the garden of thought.

Corollary.

It follows from the above principles that *there should be a variation in the relative attention given to the several mental powers, and the corresponding kinds of knowledge in the successive years of school training.* In the first four years of school the pre-

sentative powers, being naturally most active, should receive most attention; in the next four years attention should be more equally divided between the presentative, representative, and thought powers; and in succeeding years more attention should be given to the thought powers, and especially to the reason. The same variation should be observed in the attention devoted to the teaching of the corresponding kinds of knowledge—sense and concrete knowledge receiving most (but not exclusive) attention in the primary grades of school, and rational knowledge in the higher grades. It is thus seen that the variation in the relative activity of the mental powers occasions *phases* of development which are severally characterized by leading activities of the mind and the acquisition of corresponding kinds of knowledge.

PRINCIPLE III.

A true course of instruction for elementary schools cuts off a section of presentative, representative, and thought knowledge EACH YEAR.

This principle is an obvious consequence of those already considered, and is equally supported by the facts of psychology.

Universal observation shows that children at six years of age have not only acquired much presentative knowledge, but are in possession of a considerable number of general concepts and facts, and, by the natural activity of their minds, are passing increasingly from sense knowledge to thought knowledge, and from the particular facts of observation to general judgments, and, to a limited but increasing extent, to the

general truths of reason. It is, however, to be remembered that the higher thought processes have comparatively a small place in the intellectual activity of a child. The young mind acquires several, often many, sense-concepts before it forms a general concept, and it must often acquire many individual facts before it can reach a general fact, even one of judgment.

Primary Course.

It follows from these statements that while primary instruction should give its chief attention to presentative knowledge, the concepts and facts of observation and experience, it should also increasingly teach the more obvious generalizations of these facts and their expression in language. The first year's instruction in reading should, for example, exercise not only the observing powers, but also memory, imagination (modifying and constructive), conception, and judgment, and sparingly inductive reasoning. The reading lessons of the first school year abound in words expressing general concepts and ideas, and the little sentences therein express facts which relate to the feelings, actions, and duties of children and adults, the characteristic actions of domestic animals, the more obvious qualities and relations of common objects, including their class relations, and other common phenomena. These facts are both particular and general, as a glance at any primer or first reader will show.

Changes in Course.

It is thus seen that the general knowledge first taught in school should consist of common concepts, common facts, and common inductions; *i. e.*, the concepts, facts, and inductions which involve the more obvious qualities and relations

of common objects and events, and thus are within the capacity and experience of primary pupils. As pupils grow older they slowly but increasingly acquire that power of observation, analysis, and generalization necessary to form scientific concepts, and, as early as the fifth school year, they are prepared to learn the simpler elements of scientific knowledge (p. 80). Four years later they should be prepared to give attention to still higher forms of scientific thought, thus entering the so-called scientific phase of mental activity. If the first four years of a school course be called primary, the second four years intermediate, and the next four years higher or high-school, (1) the primary period would be characterized by the activity of the mind in observing, imaging, generalizing, and judging, and the consequent acquisition of the elements of common knowledge; (2) the intermediate period, by increasing activity of the thought powers and the acquisition of higher common knowledge, and the simpler elements of science; and (3) the high-school period, by more sharply analytic and discriminating scientific thought. These three periods might be characterized respectively as *sense-conceptive*, *transitional*, and *scientific*, but even these terms may seem to imply sharp transitions in instruction, and thus be misleading.

Erroneous Assumption.

There is no psychical warrant for the assumption that primary instruction should be confined to presentative activity and knowledge, and all general and scientific knowledge postponed to the high school. If in the development of the mind there be a period of exclusive sense activity, it

antedates the primary school, lying very near the cradle, certainly not above the lower kindergarten, if above the nursery. If the term science be used in the high sense of philosophy (p. 82), the scientific period of education falls largely in the college and the university. The long interval between these two extremes is the period of school education, now under consideration, and throughout this transitional period the mind is increasingly passing from sense-knowledge to thought-knowledge.

Elementary and Scientific Knowledge.

Nor is it possible to make a clean distinction between the periods of elementary knowledge and scientific knowledge, and arrange a course of instruction on this basis. It is not only true that perceptive knowledge must have a considerable place in all grades of school instruction, but scientific knowledge must necessarily appear early in the intermediate course. It is not possible to draw a line through any branch of knowledge, as developed by the race or the individual, and say here elementary knowledge ends and science begins. Every branch of science includes not only primary concepts and ideas, its simple elements, but also those general facts of judgment and induction which are the basis of its higher generalizations, and it is neither possible nor wise to hold the mind back from these simple generalizations until the so-called scientific period is reached.

Dr. Hill's Illustration.

In that educational classic, "The True Order of Studies," Dr. Thomas Hill compares a true course of study to a spiral stairway, surrounding the five great columns of human knowledge, and cutting off a section of each at every round of

its ascent. This famous simile clearly recognizes the important fact that there is a natural sequence of knowledge to be observed in teaching, and, rightly understood, it also indicates that this sequence is lateral as well as vertical. A true course of study not only cuts off a section of all the great branches of knowledge each year, but each section includes presentative, representative, and thought knowledge and activity. In its progress through each annual cycle of its ascent school instruction passes from sense-knowledge to thought-knowledge—the natural movement of the mind in all stages of its activity being from sense to reason.

Diagram.

The diagram on page 112 indicates the relative attention to be given the different kinds of knowledge in the successive years of school instruction, and also in the primary, intermediate, and high-school periods, or grades.

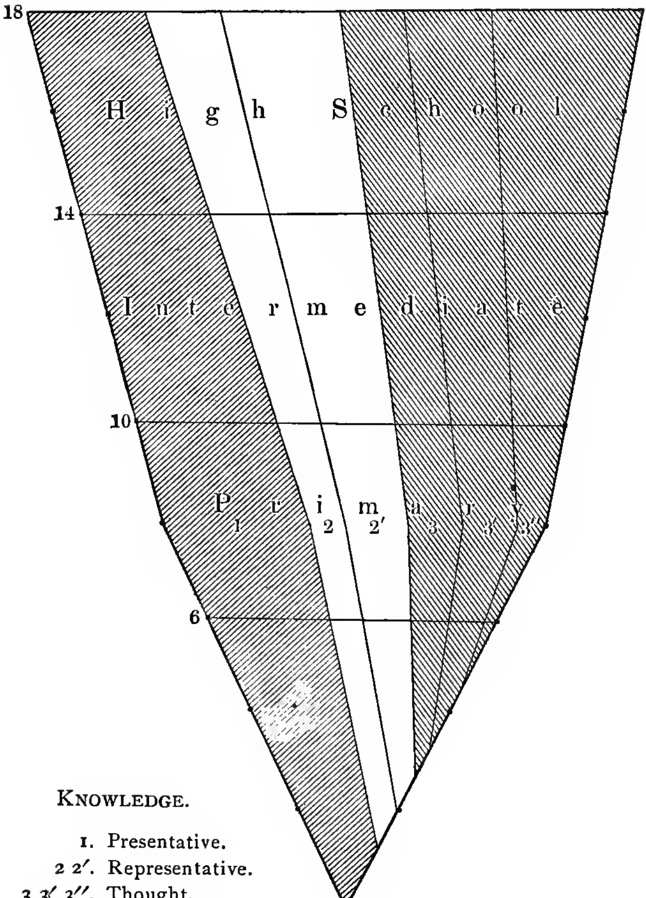
PRINCIPLE IV.

Knowledge can be taught only by occasioning the appropriate activity of the learner's mind.

This principle is based on the fact that knowledge is the *product* of the mind's action. Knowing is an act or series of acts; knowledge the result. The mind acquires knowledge only *by its own activity.* It acquires sense-knowledge by sense activity, and thought-knowledge by thought activity.

The mind is not only active in knowing, but it is *self-active.* It acquires knowledge only by putting forth an inner energy. It is not a vessel that can be filled from without, or a sponge that can be filled by

COURSE OF INSTRUCTION.



KNOWLEDGE.

1. Presentative.
2 2′. Representative.
3 3′ 3″. Thought.

mechanical absorption. It is an energy that furnishes itself by its own activity.

It follows from these facts that knowledge can be taught only by occasioning the appropriate activity of the learner's mind. It can not be transferred from the teacher's mind to the pupil's by words. It can not be communicated to the pupil in any way if his mind be passive. The essential act in acquiring knowledge is *the act of learning*, and this is the pupil's act. The teacher may present objects of knowledge to the pupil's mind, may solicit his interest, invite his attention, and direct his powers, but if his mind does not respond to these teaching acts, there will be no learning, no acquiring of knowledge. From the beginning to the end of teaching runs, as an essential condition, the learner's activity, and hence that teaching is most effective that occasions or secures the best mental action on the part of the pupil. This leads to—

PRINCIPLE V.

The primary concepts and ideas in every branch of knowledge must be taught objectively in all grades of school.

The psychical processes involved in sense-perception and other presentative acts show that the forming of an individual concept requires the presence of the object, and, since general concepts are formed from individual concepts, it follows that no concept, individual or general, can be taught *without presenting the appropriate object or objects to the mind.* The same is true in the teaching of ideas, both particular and general.

The teaching of general concepts when the individual

concepts to be generalized are already in the mind, may seem to be an exception to this principle, but the exception is apparent, not real, since the principle as stated is limited to *primary* concepts and ideas. The primary concepts in this case are the individual concepts, which are generalized, and these were acquired objectively,—by the direct perception of the objects, whether material or psychical, objective or subjective. When the mind is in possession of primary concepts and ideas, it can generalize them, forming a general concept or idea, or by imagination it can modify them or construct from them a new product. The concept river may thus be derived from the concept brook or creek; the concept mountain, from the like concept hill, etc. Compound concepts may be formed by the synthesis of simple concepts. But the fact remains that primary concepts and ideas, *the elements of all knowledge*, can only be taught or acquired by the presence of the objects.*

Apparent Exception.

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*The fact that primary concepts are acquired objectively, is illustrated by the late examinations into the "contents" of young children's minds, notably those conducted in Boston by Dr. G. Stanley Hall (*Princeton Review*, May, 1883), and by Supt. J. M. Greenwood in Kansas City, Mo. (*Proceedings National Educational Association*, 1884). In comparing the results of these two "studies" of children, allowance must be made for the difference in the ages of the children, those in Kansas City being about a year older than those in Boston (a great difference), and having had nearly a year's schooling; and also for the probable difference in the tests, especially the language used. The most significant fact that remains is that the difference in the knowledge of the two classes of children is chiefly due to *a difference of observation and experience*. The Boston children were ignorant of "crow," "ant," "squirrel," "robin," "sheep," "bee," "frog," and other like objects, because *they had not seen them*, and the Kansas City children, especially the negro children, were not ignorant of these objects because *they had seen them*.

It follows from the above principle that *no primary concept or idea can be taught through its word.* Every concept or idea is the product of the mind's own action. A word may occasion the recall of a known concept or idea associated with it, but a word can not summon a *new* concept or idea into what has been called "the presence chamber of the soul." The futile attempt to teach concepts and ideas through words is responsible for more unsatisfactory results than any other error of elementary instruction. Carlyle characterizes his teachers as "hide-bound pedants" who crammed him "with innumerable dead vocables, and called it fostering the growth of the mind." Carlyle's pedants once represented a very large class of teachers, and it is feared that this race of word-cramming pedants is not yet extinct.

Concepts and Words.

The maxim, "Ideas before words," may not be a necessary principle, even of primary instruction, but it is excellent advice. The essential thing is to teach both the idea and its sign, and especially to connect them indissolubly together, and, *to make this connection sure*, it is wise to teach the idea before the word, whenever this can be done. The facility with which children learn words, especially as sounds, is constantly giving them new words which to them have no meaning. It is the teacher's imperative duty to see that these empty words are filled with their ideas, and especially that all new words, learned and used in school, are associated with clear ideas. To this end, not only all primary concepts, but all concepts that involve primary concepts which are dim or blurred, should be taught *objectively*.

Maxim.

It is true that a general word may at first represent an individual concept. A child sees a strange animal, a monkey for example, and learns its name. The word is associated with the individual monkey seen, and recalls it in memory. When, however, the child has seen several monkeys, the resulting individual concepts are unconsciously generalized, and the word monkey comes to represent all the like objects seen, if not the class. It is believed that children learn most of their words in this way, learning and using the word before they form the general concept. The words father, mother, brother, sister, baby, kitty, etc., are at first names of individual objects. It is also true that children frequently use proper or individual names to denote classes of objects. A little child that has seen "Jumbo" calls every elephant which he sees "Jumbo."

Objective Teaching of Science.

This principle of objective teaching applies to all grades of schools—to the high school and college as well as to the primary school. It is increasingly recognized in the teaching of the physical sciences. No school of science, worthy of its name, now puts its students to the study of text-books in botany or chemistry, or other natural or physical science, before they have acquired its primary concepts and facts by the study of objects and phenomena. This is the meaning of the modern laboratory and museum. They afford needed facilities for the study of things as a preparation for the study of books which embody the results of wider observation and research. When the concepts and ideas which scientific words represent, are thus objectively

learned, books become important means of acquiring scientific knowledge, but, in acquiring the elements of knowledge, books can not take the place of things.

Communication of Knowledge.

It follows from principles IV and V that *knowledge can be presented to the mind by means of language only when the words used represent* KNOWN *concepts and ideas.* The sentence, "There is an eagle in my purse," presents no relation or fact to the mind, if the words "eagle" and "purse" do not express known objects. When all its words represent known concepts and ideas, the sentence presents a fact to the mind in such a way as to occasion thinking, and the fact is thus known.* This is what is meant by the *communication of knowledge.* The words recall known concepts and ideas, the relation between the objects of knowledge thus presented is

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* It seems to the writer a mere word quibble to deny that a fact thus presented and apprehended is known. To know an object is to be certain that it is, and the mind may be as certain of a relation thus apprehended as it is of phenomena perceived by the senses. The fact expressed in the sentence, "A piece of iron is heavier than a piece of pine wood of the same size" may be as certainly apprehended, when stated, as it would be were the fact objectively presented to the mind.

Nor is it true that while the mind knows the expressed relation, it does not know it to be *real.* The relation between known objects may be a necessity of thought or of nature, and, even when this is not true, its reality may be accepted by the mind as *certain.* The fact that six apples are more than three apples may be known as certainly when presented by words expressing known concepts as when presented objectively. It is not claimed that relations presented to the mind by language are always real or are always known to be real. Much of what is called knowledge is only probable truth—information the certainty of which is not fully accepted or known.

apprehended or thought, and this completes the communication of the knowledge to the learner's mind. In this process neither the act of knowing nor its product is transferred; they are *occasioned*, and, as a result, the knowledge of one mind is reproduced by and in another mind, and it is thus communicated or known in common. Knowledge presented to the mind by language and thus known is called *acquired* knowledge, to distinguish it from original knowledge. When knowledge that is original to one mind is communicated to another mind, it becomes to such mind acquired knowledge.

Acquired Knowledge.

It may be added that only a small part of the knowledge which every intelligent person uses for guidance, growth, and enjoyment, is original except in its primary elements. We are largely indebted to the experience and thought of others, and these are made known to us by means of language. The function of language is not merely to recall knowledge to the mind that has discerned it, but to communicate it to other minds—a function illustrated in every nursery where children try to tell what they feel and know. Speech is one of man's highest and best endowments.

It follows that it is an important end of school education to train the pupil to apprehend thought expressed in language—to read intelligently the printed page. Books contain the recorded knowledge of the race, and it is only by reading books that man can come into possession of this rich inheritance. The ability to read is the key that unlocks the treasuries of human knowledge. It is thus seen that there is an important place in school training

Study of Books.

for the study of books. The proper union of oral teaching and book study in school education is a problem of the highest practical importance (p. 152).

Principle VI.

The several powers of the mind are developed and trained by occasioning their natural and harmonious activity.

This principle is based on the fact that every normal act of the mind leaves as a result an increased power to act in like manner, and a tendency to act again—*power and tendency being the results of all right mental action* (p. 31). The power and tendency of the mind to observe are increased by observing; to imagine by imagining; to judge, by judging; to reason, by reasoning, etc. An increase of the mind's power and tendency to put forth a given activity is what is meant by its development and training.

It follows that the power of the mind to put forth any kind of activity is developed and trained *by occasioning such activity.* The power to acquire sense knowledge is developed by acquiring sense knowledge; the power to memorize language, by memorizing language; the power to think in any form, by such thinking. For this reason, the study of any branch of physical science increases one's power to master any other physical science; the study of any language, one's power to master any other language, etc. This fact also explains why the study of a branch of knowledge that trains several powers of the mind, may increase its capacity to master other branches that appeal to these powers. The critical study of

language, for example, calls into exercise mental powers that are much used even in the mastery of botany, zoölogy, and other natural sciences.*

It is claimed that an increase of the mind's power to acquire one kind of knowledge increases its power to acquire all knowledge. This may be true, to some extent, but the exclusive activity of the mind in one direction may so increase its tendency thus to act as practically to incapacitate it to act in other directions, the tendency becoming a habit.

Elementary Course. The above facts show that a course of elementary training should include all the departments of elementary knowledge, in order to give the mind a harmonious development, thus preparing it to acquire all kinds of knowledge, and also to resist the narrowing and grooving tendency of future occupations. A course of school training should at least include the elements of physical science, language, mathematics, history (man), and art.

Pupil's Activity. In all this training, it must be kept in mind that the teacher can only occasion and direct the pupil's activity. The human soul is not a machine that can be put into action by turning a crank. Its activity is the result of a self-exerted energy (p. 111). Even nature can not necessitate the mind's action. She stands over against the soul, pre-

* The late Dr. C. O. Thompson, of the Rose Polytechnic Institute, Indiana, gave it as the result of his long experience as a teacher in polytechnic schools, that students who have been thoroughly trained in Latin master the sciences and technical studies more readily than students who have not had such training.—*Proceedings of Council of Education*, 1884, p. 41.

senting objects adapted to the activity of its powers, inviting its attention, and rewarding its action, but the soul attends to these various objects at will, directs its activities, and rejoices in its acquisitions. It must not, however, be inferred that nature does not play an important part in securing the activity and development of the mind. The occasion of an act conditons its existence, even though it may not necessitate it.

Self-teaching.

Nor is it to be inferred from these facts that the child is capable of teaching himself, only needing an opportunity for his self-activity to manifest itself. Under self-teaching and nature's teaching man remains a savage. Both the family and the school assume that the child needs something more than the self-impulsion and guidance of instinct, nature, and experience, in mental activity and conduct; and so each provides him with the assistance of wider experience and knowledge, and the help of personal influence and control. The school recognizes the fact that the child does not learn to think by mere thinking, but that he learns to think correctly by thinking *under guidance.* It neither assumes that teaching can take the place of learning, nor that the best learning will take place without teaching. The school joins teaching and learning together as correlates, the one as the occasion and the other as the cause of the desired results—mental power and knowledge. Nor are these assumptions of the school inconsistent with the fact that the powers of the mind are developed and trained by activity, this activity being self-exerted. This statement leaves a place and function for teaching, while the statement that we *learn* to do by doing excludes the idea of teaching.

The question is sometimes raised whether knowledge or mental power should be made the leading aim of teaching effort. It is not easy to see how these two results can well be put in contrast, if power be limited to the capacity to acquire knowledge, since the power to know can only be developed by knowing. In all training of the mind in acquiring knowledge, the result is knowledge, as well as increased power. This raises the suspicion that those who pride themselves on the training side of their teaching and yet have indefinite knowledge as a result, may be deceived. Effective training in acquiring knowledge of any kind must give clear knowledge as a result.

Application of Principle.

A satisfactory answer to the above question requires that a distinction be made between the training of the mind in mental processes, *where skill is an end*, and the training of the mind in the acquisition of knowledge. A pupil may, for example, acquire increased skill in analytic reasoning by repeating the solution of an arithmetical problem several times, though the several repetitions give him no new knowledge. It is clear that in such a drill the value of the repetitions lessens as the effort involved decreases, and this fact suggests that there is such a thing as overdrill in teaching (p. 145). The chief value of the mental drill as such is in the acquiring of those processes which need to be made automatic, as is true of elementary processes in number, language, etc., and the fixing of fudamental results in memory, as the sums and products of the digital numbers, two and two. It should be kept in mind in teaching that the power to observe is best trained by observing new phenomena;

i. e., new to the observer; the power to imagine by constructing or creating new images; the power to judge by discerning new relations; and the power to reason by newly reaching, proving, or applying truth. When the knowledge is clear and the process certain, repetition is futile if not harmful.

Mental Power Chief Aim.

But the question above raised is broader and deeper than the answers thus indicated. It touches the comparative value of knowledge and mental power *as abiding results of school training in practical life;* and from this stand-point it is clear that the developing of power should be made the leading aim of teaching. Knowledge is necessary to enlighten and guide in all human effort, but mental power gives acumen, grasp, strength, poise, inspiration, and these are the winners of success in all the duties of practical life. Even so-called practical knowledge, to be of highest utility for guidance, must be thought out and applied by an intelligent mind. If my mind were a tablet, and with a sponge I should erase every fact learned in school and college, and not directly applied in the arts there acquired, I should not be very poor, but were I to lose the mental power gained by the mastery of these facts, so many of which were long since forgotten, I should be poor indeed.

Act and Acquisition.

This broader view of education shows that mental power is not only the most abiding, but the most practical result of school training. It justifies the statement that in teaching the act of acquiring knowledge is more important than the knowledge acquired. It was a clear apprehension of this principle that caused the learned Lessing to choose

the search for truth rather than its possession, and this is the deep meaning of the remarkable saying of Malebranche: "If truth were a bird and I held it captive, I would open my hand and let it fly away that I might again pursue and capture it."*

This important principle is embodied in the following maxim of elementary teaching:

Whatever knowledge is taught a child should be so taught that the act of acquiring it shall be of greater value than the knowledge itself.

Principle VII.

In the teaching of any school art, clear and correct ideals should inspire and guide practice.

The first step in learning any art is the forming of ideals of the results to be attained, and, as a rule, the clearer and more correct the ideals formed, the better will be the results reached by practice. This is not only true in the practice of such simple arts as the pitching of a quoit or ball, the drawing of a plain figure, etc., but also in the higher arts of oratory, music, painting, sculpture, architecture, etc. In all art, ideals inspire effort and largely determine movement and process; and, since the imagination is dependent upon observation and experience for the materials with which it constructs its ideals, the wider the learner's observation of the work and productions of skillful artists, and the greater his own experience and skill, the better will be his guiding ideals, and the more fruitful his practice.

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* Quoted from memory.

It follows that the first step in teaching any art is to lead the pupil *to form correct ideals of what he is to do or produce*, and, to this end, he should be presented with the best models and examples—as far as practicable with the "works of the masters." This is not only true in teaching the formative arts, as drawing, painting, sculpture, and the mechanic arts generally, but also in teaching oratory, music, and literature. Jenny Lind gave to her generation a new ideal of human song, and that ideal has awakened in many human voices an almost divine melody. Wendell Phillips and John B. Gough have respectively given to hundreds of American speakers their inspiring ideals of oratory.

Ideals.

The next step in teaching any art is to give the pupil *a knowledge of the processes* by which his ideals can best be embodied. It is true that this knowledge may be slowly gained by tentative practice, but since it is not an end but a *means* of practice, the earlier it is acquired the sooner will the pupil master art processes. It is true that this guiding knowledge can not be acquired much in advance of practice, since practice not only applies but indirectly interprets and makes clearer the knowledge that guides it.

Guiding Knowledge.

These facts expose the fallacy that often underlies the attempt to teach knowledge by the *act* of embodying it in material forms. It is claimed, for example, that a child acquires an idea of a triangle, a square, etc., by cutting pieces of paper or by sawing boards into such forms, whereas the child must have ideas of these forms *before* he can make them, except by pattern. The ideal must precede and guide the proc-

ess. The same is true of the educative value of the school process of molding the contours and reliefs of countries in sand. A knowledge of the contour and relief must precede and guide the moulding, and even then the child may obtain a very imperfect conception of the surface of the country thus represented. The mind must be assisted and trained in the interpretation of these forms. The artisans who devote their time to the making of relief globes and maps by pattern, acquire thus little knowledge of geography.

Principles.

But the processes of every art are based on *principles*, and these, when formulated, become its rules, and hence a complete knowledge of an art includes a knowledge of its guiding principles. These principles are of little, if any, value to the young learner, and hence should not be taught too early, and, when taught, they should be first reached, one by one, by an analysis of familiar processes and by the study of the productions that embody them—that is, they should be taught objectively. In the later and higher practice of an art, a knowledge of its guiding principles is of great value, and these may finally take the place of the living teacher. It may be added that the principles and rules of an art are most helpful in practice when they are so familiar to the artist as to be observed without being consciously kept in mind. It is only when ideals and principles become unconscious guides that true art appears.

This principle explains the interaction of mind and hand in manual processes, and shows how the hand assists the mind that guides it. The movements of

the hand have a reflex influence on the mind, *provided the mind attends to and guides the hand.* When the action of the hand or any other part or organ of the body is involuntary and automatic, it has little, if any, influence on the mind. It is only when it controls and acts with the body, that the mind is developed and trained. The educative influence does not flow primarily from the hand to the brain, but from the mind to the brain, and from the brain to the hand, and it is only by reflex action that the mind is assisted. This fact throws much light on the historic fact that mere physical labor has never uplifted and educated any people, either intellectually or morally. The slaves, the serfs, and the coolies of the world have never been greatly improved in intelligence or character by labor, a fact that is in the face of some of the recent assumptions in the discussion of the question of manual training.

Mind and Hand.

It is thus seen that the so-called Comenian maxim, "We learn to do by doing," is, even when applied to outer doing, only a half truth. Simple doing, without the guidance of knowledge, never made an artist or an artisan. The poorest teaching, for example, is often done by teachers who have grown gray in the school-room. What is needed to transmute experience into teaching skill and power, is the inspiration of true ideals and the guidance of correct principles. Blind experience is always and everywhere a plodder.

Comenian Maxim.

The arts taught in elementary schools, as reading, writing, language, music, etc., are never properly mastered by mere practice. Even the mastery of the

two form arts, writing, and drawing, requires something more than the mechanical imitation of model copies for a given number of minutes each day. The teacher's work is to lead the pupil to form clear ideals of results, to teach him the best processes for attaining these results, and then to secure necessary practice under the most inspiring guidance. Automatic exercises may increase the mechanical facility with which pupils repeat known processes, but such practice never corrects errors or suggests improved methods or processes. They beget the habit of non-attention to the conditions of right activity, and create mental tendencies which are subversive of both teaching and learning.

Teaching School Arts.

On the other hand, no mistake in elementary teaching is more absurd or futile than the attempt to teach a school art by simply imparting a theoretical knowledge of its principles and processes. The mastery of an art involves *the acquisition of skill*, and a knowledge of the art is chiefly valuable as a means to this end. Instruction without practice can not impart skill, and hence can not make an artist.

Practice Essential.

The old-time attempt to teach the art of using good English, by means of technical grammar, is an illustration of this error. This attempt was based on the false notion that skill in speech and writing is a necessary result of a knowledge of the rules of language—an error still too common in American schools, and especially in elementary schools whose pupils are too young to apprehend or apply abstract principles in any art.

Illustration.

The stupid custom of teaching formal analysis and parsing before practical composition richly deserves the ridicule now heaped upon it, but is there not evidence of a tendency to the opposite extreme? It now looks as if there would soon be an opportunity to laugh at the equally futile attempt to teach the art of correct speech by haphazard, cut-feed language lessons, some of which are about as mechanical as the filling of a basket with chips, and result in about the same kind of skill. The function of language is *to express thought*, and no exercise in the use of language can impart much skill that does not begin with the awakening of thought and end with its correct expression.

Language Lessons.

What is needed to impart skill in the use of language is a training that begins with the correct use of language in speech and in writing, and ends with its scientific study, and in such a course there is a place not only for oral and written composition, but also for technical grammar and rhetoric—a place where a knowledge of the principles of language aids in its use. For one, I gratefully acknowledge my indebtedness to Lindley Murray for some of the little skill which I have acquired in the use of the English language, and especially am I indebted to what has been characterized as the "grammatical dissection" of good English. The thorough grammatical analysis of Pollok's Course of Time, Pope's Essay on Man, and Milton's Paradise Lost, and, later, the rhetorical analysis of Goldsmith's Deserted Village, and Shakespeare's Macbeth and Julius Cæsar, gave me guiding ideals of correct, forcible, and elegant English. It is, however, important to

English Grammar.

note that these were not the studies of early childhood, and that manhood has afforded me some of the practice which was so unwisely denied in school and college.

METHODS OF TEACHING.

METHODS OF TEACHING.

THE foregoing principles clearly indicate the characteristic features of a general method of teaching. It only remains to develop and outline this method, and then apply it in methods of teaching the several elementary branches.

PRELIMINARY DEFINITIONS.

Terms Defined.

Attention has been called to the fact that educational terms are used in different senses by writers on pedagogy (p. 12). This is specially true of the terms *instruction*, *teaching*, and *education*. These terms are used by some writers as synonymous, and by others to denote acts and processes which are entirely distinct. One of the most critical of recent writers defines teaching as the act of presenting objects and subjects of thought to the pupil's mind as occasions of mental activity and knowledge; instruction as the pupil's activity and knowledge occasioned by teaching; and education as the state of mind produced by instruction. These definitions make teaching the teacher's act, instruction the pupil's act, and education the result. The practical difficulty in using these terms in such radically distinct senses is the fact

that they are imbedded in literature as nearly synonymous, being often used as identical and interchangeable, and the same is true of the cognate terms, instructor, teacher, and educator. The best usage is, however, increasingly employing these terms in somewhat different senses, and every writer is free to use them in such senses, within these limits, as he may prefer.

In this work, the terms *instruction*, *training*, *teaching*, *learning*, *education*, *study*, and *method* are used in the senses indicated by the following definitions:

Instruction. Instruction is the act of presenting objects and subjects of knowledge to the pupil's mind in such manner as to occasion those mental activities that result in knowledge. Instruction is the occasion, the pupil's mental activity the cause, and knowledge the result.

Training. Training is the occasioning and directing of the pupil's activities in such manner as to result in power and skill—mental, moral, and physical. Training involves doing or practice, with power and skill as ends; as, to train a company of soldiers, to train an artisan, to train a performer, etc. The words training and drill are nearly synonymous.

Teaching. Teaching is the applying of means to the pupil's mind in such manner as to occasion those mental activities that result in knowledge, power, and skill, its three immediate ends. Teaching is the occasion, the pupil's activity the immediate cause, and knowledge or power or skill the result.

Teaching includes both instruction and training, instruction being that part of teaching that results in knowledge, and training that part which results in

power or skill. While these processes or acts are distinguishable in thought, they are not entirely separable in practice. Instruction usually involves training, and training depends on instruction, and hence teaching is the term that best describes the complete process.

Oral Teaching.

When the instruction element in teaching is presented by spoken words, or orally, the process is called *oral teaching;* when it is presented in print or in writing, the process is called *written teaching*. The instruction imparted by the living teacher is chiefly oral.

Learning.

Learning is the pupil's activity in acquiring knowledge or skill, and this activity may be occasioned by the living teacher, by books, by nature, or by other means. Learning is the *pupil's own act*, and teaching is possible only when it occasions and is attended by learning (p. 113).

Education.

Education is any process or act which results in knowledge, or power, or skill. It includes not only teaching and learning, but all acts, processes, and influences which occasion these results, whether as scholarship, culture, habit, or character.*

It is thus seen that education is a more comprehensive term than teaching, and teaching more comprehensive than instruction. There is a like but not strictly parallel difference in the cognate terms educator, teacher, and instructor. The best usage applies the term

* The attempt to limit education to the drawing forth or developing of the mental powers (its root meaning) has not been successful. It includes not only this radical act, but all activities and influences which result in human power, skill, and knowledge.

educator to a person who is practically versed in the science and art of education. A teacher may or may not be an educator, and an educator may or may not be a teacher. A superintendent may be an educator, and the term may also be applied to an author or writer on education. The terms teacher and instructor are often used as synonymous and identical, but the tendency is to apply the term instructor to one who teaches knowledge, thus making it less comprehensive than teacher.*

The term education is also used to denote the result of educational activities and influences. This is the sense in which the term is used in such expressions, as "a good education for business," "a gentleman of liberal education," etc. When the learner's activities are prompted by subjective cravings or motives, and are directed by himself, the result is called *self-education.* There is an element of self-education in all education that is characterized by mental vigor. Learning is not only the learner's own act, but the most fruitful learning is self-impelled and self-directed.

Self Education.

Study is the attentive application of the mind to an object or subject for the purpose of acquiring a knowledge of it. Study involves persistent attention, the continued or prolonged holding

Study.

* This tendency to narrow the meaning of instructor is seen in the college distinction between instructor and professor, the term instructor being applied to college teachers of a lower grade than the term professor. This distinction is also indicated by the use of the preposition "in" after instructor, and "of" after professor; as an instructor *in* physics, a professor *of* physics, etc.

of the mind to the knowing of an object by acts of the will. The term study is more commonly applied to the attentive application of the mind to an object when the living teacher is not present directing attention or occasioning mental activity, as study out of class or out of school. The term is also loosely applied to the pupil's practice of an art under his more immediate self-direction.

It follows that the reading of a book without attentive effort to grasp the thought is not study. The glancing over a newspaper to glean the news, or the running over the pages of a story to discover the plot and catch the more striking incidents, is not worthy to be called reading, much less study; and it may be added that such skimming of the printed page weakens and dissipates mental power. The forming of the habit of running over books without thought is usually the end of mental growth and culture.

Course of Study.

An object or subject of study may be a material object, an event, knowledge presented in language, or any other object to be known. An object of study is called *a study*, and a series of related objects of study, a *branch of study*. When several branches of study are collected and arranged with reference to certain conditions and ends, they constitute a *course of study*.

Method.

A method of teaching is a series of teaching acts so arranged as to attain a definite end or result. Method is more than the manner or way of an act or several acts. It involves a systematic arrangement of a series of acts, an orderly and rational procedure to a given end. A single

teaching act has its manner or way, but not method, and a series of such acts may have a characteristic manner without having method or system. This distinction between method and manner as applied to teaching is shown in such expressions as "Reading may be taught in an interesting manner by the word method," "She taught number by the objective method in a sprightly manner," etc.

GENERAL METHODS OF TEACHING.

Analytic and Synthetic.

There are two related methods of teaching called *analytic* and *synthetic*. In the analytic method knowledge is taught by beginning with a whole, and proceeding to its elements or constituent parts; and in the synthetic method, knowledge is taught by beginning with its elements or constituent parts, and proceeding to the whole.* But since analysis and synthesis are necessarily united in every complete process, each being the necessary correlative of the other (as Sir William Hamilton shows), it is more accurate, as well as practically better, to designate a method of teaching as analytic when it begins with analysis and ends with synthesis, and as synthetic when it begins with synthesis and ends with analysis.

These two methods of teaching are illustrated in the

*It is not meant that the elements or constituent parts are seen by the learner at the beginning to be parts of a whole, for this would involve a prior knowledge of the whole. The writer sees no ground for the view sometimes urged that only he who knows a whole can synthesize its elements. On the contrary, the whole is often only known by synthesizing its elements, these being first known as individual facts.

first steps in teaching reading. When a word is taught as a whole, and then its elements or letters are taught, the method employed is analytic. When the elements or letters are first taught, and then through these the word is taught, the method is synthetic. It will be noted that the process of reading sentences and paragraphs is necessarily synthetic. The reader passes from the successive words in a sentence to the sentence as a whole, and from the successive sentences in a paragraph to the paragraph as a whole. A knowledge of a city or of a state or country is necessarily reached by synthesis, and the same is true of all objects that can not be first presented to the mind as a whole.

There are also two other related methods of teaching called *inductive* and *deductive*. A method of teaching is inductive when it begins with individual facts and by induction reaches a general truth or principle. A method is deductive when it begins with general truths or principles and proceeds by acts of reasoning to their constituent or included facts or truths.

Inductive and Deductive.

It should be observed that all deductive teaching is analytic, and all inductive teaching synthetic, but the converse is not true. Only deductive knowledge can be taught deductively, and only inductive knowledge can be taught inductively. The constituent parts of a chair, a landscape, a scene, or a story can be taught analytically, but not by deduction. Much of history must be taught synthetically, but its facts can not be grouped by induction. The reading of the description of a journey, a life, a country, or a natural object is a synthetic, but not an inductive process.

DISTINCT TEACHING PROCESSES.

It has been shown that the principal means for securing the ends of education are *teaching* and *learning*, the latter including study proper and practice. The first of these means is the teacher's work; the second is the pupil's activity, though more or less under guidance.

Three Processes.

Teaching includes three quite distinct processes; viz., *instruction*, to occasion the pupil's acquisition of knowledge and power; *drill* to deepen impressions and impart skill; and *examination*, to disclose or test results. It will hereafter be shown that these three processes support and assist each other; that they all unite in occasioning those activities which result in knowledge, power, and skill. It may here be noted that instruction has more special reference to knowledge and power as ends; and drill, to power and skill; while testing supports and energizes instruction and drill and also learning.

INSTRUCTION.

The first of these means includes oral and written instruction; *i. e.*, instruction by the living teacher and instruction by books. Since the latter can best be considered under book study (p. 149), attention may here be directed to the nature and function of oral instruction, or, if the wider term be preferred, *oral teaching*.

Oral instruction has three somewhat distinct phases. It includes— **Oral Instruction.**

1. The presenting of objects, material or immaterial, to the pupil's mind in such manner as to occasion those mental activities that result in a knowledge of these objects. This includes the exciting of the pupil's curiosity, the directing of his observation and thought, the fixing of his attention, and all other means that assist him in knowing the objects presented. This may be called *objective oral teaching*. **Objective.**

2. The leading of the pupil to recall concepts or ideas of objects previously presented to the mind and known, and by thinking to discern their likenesses and differences, their relations as parts and wholes, as means and ends, as causes and effects, etc. This involves the use of words which represent concepts and ideas known to the pupil, and, being reknown, become present elements of thought. The teacher's special function is to lead the pupil to represent these elements, and by thought to attain the desired knowledge. To this end, the teacher does not directly tell the pupil what he wishes him to learn, but by skillful direction leads him to discover or discern it for himself, a method specially applicable in teaching inductive knowledge, as the definitions, rules, and principles of arithmetic, and also in all analytic processes. This may be called *indirect oral teaching*. **Indirect.**

3. The direct communication of facts to the pupil by means of oral language. To this end, the teacher expresses relations (new to the pupil) between known but absent objects of knowledge by means of words which represent ideas of **Direct.**

things, qualities, actions, and relations, familiar to the pupil. The words of the teacher recall known concepts and ideas, and the pupil apprehends or thinks the relation or thought expressed, which completes its communication to his mind. This presenting of new relations of known objects to the pupil by means of language may be called *direct oral teaching*.*

The possibility of thus presenting knowledge to the mind by means of language is a matter of daily experience, and on the certainty of the knowledge thus acquired are based most of man's aims, hopes, and efforts. It is this that makes speech one of man's highest and best endowments. Indeed, the prime function of language is to communicate the knowledge possessed by one mind to another, and it accomplishes this by its power to occasion appropriate activities in the mind addressed. The essential condition of thus communicating knowledge to another mind is the use of words that represent known concepts and ideas (p. 117). Take, for illustration, the sentence, "The source of a stream is higher than its mouth." The thought thus expressed may be clearly apprehended by a mind that has the concepts denoted by "source," "stream," higher," and "its mouth." It may be true that this fact can be better taught by the indirect or

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*It may be claimed that this is not oral teaching, and that the result is not knowledge, but information. This clearly depends on what is meant by teaching and knowledge. It is, of course, possible to give a meaning to teaching that excludes the greater part of the teacher's work, and to give a meaning to knowledge that includes only what is directly known through the senses, but such definitions are too narrow and technical to be very helpful in the study of principles and methods of education.

inductive method, but this is not true of such a fact as "General Grant died on Mt. McGregor, July 23rd, 1885," and multitudes of other facts that might be cited. Many of the most inductive truths of science are communicated to other minds by language, and by them are clearly grasped and known. They are often seen to be true as soon as stated.

Union.

It is further to be observed that these three methods or phases of oral instruction—objective, indirect, and direct—are not only used in elementary teaching, but they are often blended in the same lesson. A simple "object lesson" may involve oral directions for observing, including the asking of questions, and not unfrequently the telling of some fact to excite curiosity, deepen interest, and direct observation and thought. The present object is often but a stimulus of the mind in thought activities.

Maxim.

It is, however, an important principle of oral teaching that *the pupil should not be directly told what he can easily be led to observe or discern for himself.* A violation of this principle robs the pupil of the joy and strength that would come from the discovery of truth, and it is feared that this is still a very common error in our schools. Direct instruction has been so seriously and widely abused that it is hardly possible to put too much emphasis on the importance of using objective and indirect methods, when practicable. They are not only of the highest value in imparting clear and accurate elementary knowledge, and in training the mind to think, but they thus prepare the way for direct teaching, oral and written, and for book study. The primary teacher

needs to keep the fact in mind that much talking may be very poor teaching.

Drill.

Function.

The second of the teaching processes, above named, is the *drill*, having for its special end the imparting of increased power and skill. In school education, it is not enough that pupils be led to the apprehension of a truth, but, what is equally important, they must acquire the power to apprehend it again with greater readiness and clearness. It is not enough that pupils once reach a truth by inductive steps under the teacher's guidance, but they must acquire the power to reach it again with less guidance and greater certainty. It is not enough that they be led to see the relations and take the steps involved in the analytic solution of an arithmetical problem, but they must acquire the power to see these relations easily and clearly, and to take the successive steps with readiness and ease. These results are largely secured by drill, by repeating acts or processes until the requisite power and facility is secured. It is true that every act of the mind leaves as its necessary result an increased power to act again in like manner (p. 50), but the desired degree of power is often secured only by repeating the act one or more times, each skillful repetition resulting in an increase of power.

Drill in Teaching Art.

The drill is not only an important element in teaching knowledge and increasing mental power, but it is an essential means of imparting that form of power called skill. This is specially true

in teaching the school arts of reading, writing, drawing, singing, etc., arts involving the action of the body, as the hand, the eye, the vocal organs, etc. In acquiring these arts, the pupil must not only have a clear ideal of what is to be done, but the body must be made the mind's ready and facile agent, and this often requires long and well-directed practice. No manual art is properly mastered until the manipulations involved become largely automatic, and the same automatic action is required in arts that do not require the use of the hand. The teaching of any art requires the transmuting of knowledge into skill by tactful drill and practice.

Abuse of Drill.

This calls attention to the fact that no other teaching exercise is more readily or frequently abused than the drill. In unskillful hands, it easily degenerates into a mechanical routine that adds very little to the knowledge, power, or skill of the pupil. Nothing in school work can exceed the stupidity of some of the so-called drills to which classes are subjected. The greater part of a spelling drill, for example, is often spent on words which no pupil has misspelled, or is ever likely to misspell,—which would require a special effort to misspell. Pupils drone over reading lessons which they know by heart, and reread them without the least gain either in grasp of thought or in its vocal expression. Pupils write in an inattentive and mechanical manner page after page, the writing actually deteriorating from the top to the bottom of each page. Pupils are required to solve problems over and over, which they first solved at a glance, and young pupils are sometimes kept combining and separating groups of objects after

they have acquired the power to add and subtract the corresponding concrete numbers, and even abstract numbers. Drills with counters and match-sticks may be as useless and senseless as drills in counting by naming the successive numbers, and this can certainly be made sufficiently stupid to illustrate what is possible in this direction. The waste of time in useless drills is often a serious evil in school work, and aimless drills are generally useless. The right use of the drill requires insight, judgment, and tact.

Abuse in Graded Schools.

The abuse of the drill is often aggravated in graded schools by the necessity of requiring the brighter pupils to go over and over what they have mastered, for the benefit of the duller pupils, who need more instruction and drill. The amount of time and effort thus wasted by bright and industrious pupils is often very great, and, what is worse, they not unfrequently lose interest and fall into indolent and careless habits. Being chained year after year to the duller pupils, they learn to keep step, and soon scarcely show their ability to advance more rapidly. It is for this reason that the extent of this evil is not always evident to the teacher. The writer has known teachers so thoroughly accustomed to "the grind of the system" that they would deny that the brighter pupils in their classes were at all injured by being held back by the duller ones, and yet these very teachers were drilling their classes until nearly all of their pupils could reach the coveted "ninety per cent" in examinations! The teaching of pupils in classes in a graded system, without sacrificing their individual powers and needs, is a difficult but very important problem.

Testing.

The third exercise included in teaching is *the testing of the results of instruction and learning*. The propriety of considering testing a form of teaching has been questioned, but such a classification is clearly justified by the influence of testing on the efforts of the pupil. It arouses interest, increases attention, and adds an increased energy and persistence to mental action. It also throws needed light on the work of the teacher, disclosing imperfect results, and thus indicating what future instruction and training may be needed. Indeed, whatever may be one's theory respecting the value of testing or its relation to teaching, there are few, if any, successful teachers that do not in their practice unite testing with instruction and drill, and this is true in all grades of teaching, but increasingly from the lower to the higher. It is often necessary in giving the simplest primary lessons to test the results as a means of determining the nature and order of succeeding steps. This incidental testing is also supplemented by simple test exercises, and, in the higher grades of teaching, these give place to thorough examinations.

Relation to Study.

The importance of the test as a means of securing study has long been recognized, and, as a consequence, it has had a prominent place in school training—doubtless too prominent, especially in elementary schools, where it has often taken the place of needed instruction and drill. There is also a very close relation between both instruction and study and the nature of the tests applied to the re-

sults. If the tests touch only the memory, the pupils will memorize; if the tests are narrow and technical, the instruction will be narrow and technical; if the tests run to figures, the drills and study will run to figures; if the tests demand details, they will emphasize and make imperative all "the lumber of the text-books." It may be stated as a general fact that school instruction and study are never much wider or better than the tests by which they are measured.

Abuse of the Test.

The test has been widely abused in American schools, and this abuse has had an unfavorable influence, especially on elementary education. The use of tests that chiefly touch verbal memory, once almost universal, has been the occasion of much of the stupid memoriter work which so long characterized school training, and the use of examination results as a means of comparing the standing of schools and pupils has narrowed and made mechanical the instruction of many a corps of teachers capable of better work. It is, indeed, difficult to determine which is the greater evil, the use of improper tests or the improper use of test results. One of the most important problems in the management of graded schools is to determine how to subject the results of instruction and study to thorough testing, and not narrow and groove such instruction and study—a problem that will subsequently receive somewhat careful consideration (p. 193).

THE STUDY OF BOOKS.

It has been shown that learning is the result of the pupil's own activity, and that the end of teaching is to occasion and direct the learning activities of the pupil. Teaching may occasion the pupil's immediate activity, as during a class exercise, or it may occasion his activity out of the class and even out of school. This activity may include study.

Book Study.

It has also been shown that it is an important end of teaching to train the pupil to apprehend knowledge expressed in language—to pick thought out of its verbal husk; to master the printed page. It now remains to consider more specially the training of the pupil in *the art of book study* as a means of book mastery.

Classes of Books.

The books used by pupils in school may be roughly classified as *knowledge books* and *drill books*. The chief purpose of the former is to present knowledge to the pupil's mind by means of language and pictorial illustration. A manual of geography, or history, or physiology, is a knowledge book. Such a book may present knowledge directly or it may guide the pupil's mind to the discovery of knowledge. The chief aim of the drill book is to present to the pupil material for practice in acquiring power and skill. A book containing arithmetical problems for solution, words for spelling, sentences for analysis and parsing, directions for practicing an art, etc., is a drill book.

Mixed Books. Several of the books in school use are books of knowledge and drill combined. This is true of an arithmetic that presents not only examples and problems for practice, but also definitions, principles, rules, and other statements of what may be called the science of numbers. It is also true of a manual of English grammar that presents, in addition to materials for practice in analysis and synthesis, the elements of the science of language. A reader is both a knowledge book and a drill book, though too often used as a means of teaching the art of naming words at sight. An elementary text-book in science should not only present knowledge, but it should also direct the pupil in the study of material things and phenomena, to the end that his knowledge of primary ideas and facts may be widened and made clear and definite.

Value of Book Study. The value of drill books in school training is generally conceded, but a doubt has been raised respecting the use of knowledge books, especially in elementary schools. It is claimed that the knowledge presented in school-books, excepting such as is connected with a school art, can be more readily taught orally, and hence it is inferred that the use of such books in elementary schools is a mistake. But the fact claimed does not justify the inference, since the prime end of school training is not the imparting of knowledge, but the imparting of the power to acquire knowledge, and this includes *the power to acquire knowledge from books* (p. 118); and since the majority of pupils leave school before they reach the secondary or high-school period, it is important that they be early trained in the art of reading books with

ease and pleasure, and this involves practice in the study of books, or book mastery.

It is possible so to teach pupils during the first eight years of school that, as a result, they will have very little power to master books, and, what is worse, less desire or inclination to read books that require thoughtful study to master. It is the testimony of many experienced teachers in high schools, especially in cities where oral teaching has been prominent, that pupils now come to them with less ability to master books than formerly, and with less effective habit of study. It is admitted that such testimony as this is to be accepted with caution, since it is difficult to carry in the mind data for such comparisons; but, in this case, the testimony is not only uniform, but it is supported by reasons that explain the result. The ability to master the printed page can only be acquired, as all art is acquired, by well-directed practice. Besides, it is clearly possible to train a child into the habit of so relying on the living teacher for guidance in observation and thought, and for stimulation and inspiration, that he has neither the inclination nor the power to hold the mind to the study of the printed page until its contents are mastered; and it is scarcely necessary to add that such training is not the best possible preparation for self-education when school assistance ends.

Neglect of Book Study.

There ought to be no chasm between oral teaching and book study in school training, but these two means of education should be harmoniously and effectively united. This is increasingly considered the most important problem that now confronts American teachers.

ORAL TEACHING AND BOOK STUDY.

It may be stated as a guiding principle in the solution of this problem that *oral teaching and book study are complementary means of school training, the former being primarily preparatory to the latter.*

Primary Knowledge. This guiding relation is seen in the fact that all primary concepts and ideas in every branch of knowledge must be taught *objectively*, and hence orally, it being impossible for the pupil to acquire these elements of knowledge from language (p. 113). The same is true of those primary facts which are only acquired by observing and comparing real objects and phenomena. The attempt to impart such primary knowledge by putting young children to studying, much less to memorizing, printed language, can only end in failure. It is clear that to this extent, at least, oral teaching must precede and prepare the way for intelligent book study in all grades of school.

The Eye and Ear. Another reason for making oral teaching preparatory to book study in elementary training is the fact that written language is not so easily understood by children as spoken language. The first knowledge which the child acquires from language, is presented to the mind *through the ear*, and so the child early forms the habit of attending to and comprehending spoken language. By the time he enters school, he has acquired the power to grasp thought within his experience, when expressed by known words, and this is done so readily that he is scarcely conscious of giving attention to the separate words. When the

art of reading is learned, the child is obliged to give conscious attention in succession to the words which make up a sentence in order to know the sentence as a whole and grasp the thought expressed by it. It takes a child a long time to acquire the power to run the eye unconciously over the words of a sentence, and see the sentence *as a whole*, and, until this power is acquired, reading is a more difficult art than listening to the same language when spoken.

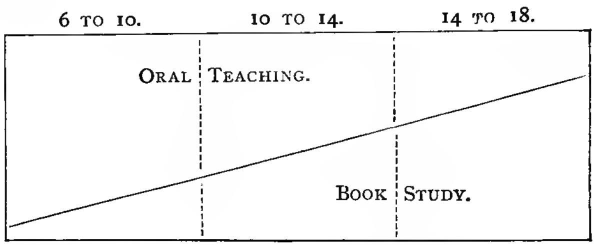
Voice aided by Bodily Expression.

Moreover, in speech the voice is greatly assisted by bodily expression. The movements of the speaker's arms and hands and the expression of his face often convey more meaning to the child than the words spoken by him. Not only the emotions and desires of the soul but many of its thoughts have a bodily manifestation, and hence a gesture or a look may be more expressive than a word. The writer has often seen the dumb tell an incident or story very intelligently by means of pantomine. The face and the hand are silent partners of the tongue in the art of expressing thought. Indeed, so great are the advantages of the living and present speaker over the silent book, that comparatively few persons ever acquire the power to read books with the same ease and grasp that they listen to speech. So marked is this difference during the period of elementary schooling, that oral teaching is a necessary means of preparing the pupil to read the printed page intelligently, and it must not only precede but must accompany book study.

It is not meant that all oral teaching should have a direct relation to book study. Much oral teaching guides the pupil in learning school arts, and especially

in forming moral habits and character. The power to read books is only one of the ends of school training.

Another important truth to be observed in the solution of this teaching problem is the fact that *the amount of oral teaching decreases as we pass up in the school grades, and the amount of book study increases.* This mutual relation is shown by the following diagram:



In this diagram the first eight years (from 6 to 14) represent the period of elementary education, including primary, four years, and intermediate or grammar-school, four years; and the last four years (14 to 18) represent the high-school period.

THEIR UNION IN PRIMARY CLASSES.

In Teaching Reading. In primary classes, oral teaching and book study are chiefly united in the teaching of reading, including spelling; and it is both desirable and possible so to teach reading during these four years as to give the pupil considerable power in the mastery of the printed page, as well as to initiate the habit of attentive study. It is also possible so to teach reading as to make the art a stupid process of

mere word calling, with little intelligent apprehension of the meaning of the words named, and with less grasp and appreciation of the thoughts which they express. The teaching of reading to primary pupils involves not only the teaching of words as such, but the teaching of the concepts and ideas which the words express, and the leading of the pupil to a clear grasp of the thought to be read. All true reading is thought reading, and this is as true in oral reading as in silent reading. The expression of a thought with the voice requires that it first be *in the mind*. In the primary lessons in reading, the thought and emotion must not only be developed and illustrated, but the imagination must be assisted to construct the mental pictures involved. All this involves skillful oral teaching as well as study, as hereafter shown (p. 219).

Numbers.

The teaching of numbers presents the next opportunity for the introduction of book study. During the first two years of school training, numbers are best taught without the pupil's use of a book, but, in the third year and subsequently, oral teaching and book study may be easily and effectively united. The elementary arithmetic stands next to the reader as a means of training a child in the comprehension of printed language, and especially is this true when it contains many practical problems for study, grasp, and solution. There is no finer training for a child in close thinking than the mastery of language that presents simple relations between concrete numbers, and no language can be made a more effective means of training in book study. In the studying of such language the child's understanding is exercised rather than his memory, since he must see the re-

lations between the numbers in order to solve the problems. There is no easier or surer test of his grasp of the thought than that thus presented.

Other Subjects Taught Orally.

In addition to this training in reading and number, and the initiating of the child into the other fundamental arts, the first four years of school should teach the primary concepts and facts of geography (those relating to the child's world of home) and such other simple elements of knowledge as may be acquired by observation and experience. Most of this elementary knowledge can only be taught orally, and, since much of it has little direct reference to the branches of study subsequently presented in books, this period of school training is characterized by oral teaching. The pupil is not only thus furnished with a large stock of primary ideas and facts, but is trained in their expression in language. It is preëminently the period of word learning and language training—of acquiring skill in the use of common language.

Their Union in Intermediate Classes.

Reading.

During the next four years (the intermediate or grammar-school period), the teaching of reading should increasingly train the pupil in the mastery of written language, and, to this end, it should increasingly necessitate earnest book study. The reading exercise should not only develop all new concepts, images, figures of speech, and thoughts, but it should thoroughly test the pupil's understanding and appreciation of the lessons or pieces read.

The teaching of arithmetic during these years should unite oral and written processes; and, by easy inductive steps, the pupils should be increasingly led to a knowledge of principles and definitions, and to a ready generalization of processes into rules—in other words, to the science of numbers. The text-book will furnish excellent material for such training, and intelligent and systematic book study can be easily secured.

Arithmetic.

When the fifth school year is reached (if not a year earlier), the pupils should be well prepared for the study of an elementary manual of geography, and there is no book better suited for pupils of this age than such a manual. The concepts and facts of home geography, taught orally in the primary period, not only afford an excellent starting-point, but the maps and illustrations appeal to the eye, and make the study semi-objective. Besides the successive lessons may be readily developed orally, and the young pupil be thus specially prepared for the intelligent study of map or text. No elementary branch permits of more complete and satisfactory union of oral teaching and book study during this intermediate period of training.

Geography.

In the seventh and eighth school years (better eighth and ninth), the training in language may be supplemented by English grammar, provided skillful oral teaching prepare the way for the study of the book. Both analysis and parsing must be taught orally, and the book will furnish only a part of the sentences needed for practice. The mastery of the simple sentence in its several forms will require

English Grammar.

a year's instruction and drill (p. 259). The so-called principles of language can only be reached by careful inductive study of language, and this is not easy work for pupils in these early years. The value of English grammar as a branch of study at this period will depend chiefly on the manner in which the subject is taught. The use of good English is the best road to a practical knowledge of what constitutes good English.

Elements of Physiology.

In the seventh or eighth year the elements of physiology may be successfully taught by the use of a manual, but this should not be the beginning of instruction in this subject. Much important knowledge relating to the human body and the promotion of its health should be early taught to children. In giving such instruction it should be kept in mind that children can apprehend hygienic facts and duties long before they can understand their scientific reasons. It is a grave mistake to attempt to present such reasons by teaching young children *the anatomy of the vital organs.** It is also to be remembered that the essential duty of the school is to see that the hygienic knowledge taught takes practical issue in right habits and conduct. It is not enough to teach children the facts relating to cleanliness, posture, exercise, pure air, etc., but they must put these facts into practice, at

Observance of Laws of Health.

* The writer has long doubted the wisdom of teaching young children the anatomy of the vital organs. He has feared that such instruction, especially in the case of children who are morbidly sensitive, may result in habits of introspection, and thus interfere with the normal action of the vital organs and disturb vital processes. The evil may be aggravated by the use of charts and models as illustrations.

least while at school. Much excellent instruction on the bad effects of breathing impure air is given in school-rooms which present *at the time* a practical illustration of the evil condemned, and it sometimes happens that the teacher is a living example of the consequences of an habitual disregard of the "laws of health." What is needed is a clear recognition of the fact that hygiene is not simply a science, but *an art to be practiced.* Health is one of the fundamental arts, and it should be as faithfully taught in the schools as reading or numbers

Use of Book.

But our present purpose is to note the easy union of oral instruction and study when a manual of physiology is used by the pupils. All of the more obvious facts of the science can be taught orally, and most of them may be learned from a good text-book, especially if its study be preceded by necessary oral instruction, made effective by observation. The materials for such objective teaching and study are within comparatively easy reach, and the text and illustrations of a good manual may thus be made easy to master. For these and other reasons, the use of such a manual affords an excellent opportunity for training pupils *in the art of gaining knowledge from books.* To this end, oral teaching and observation must be supplemented by earnest book study, and, to secure such study, the pupils must be held by searching tests to the mastery of assigned lessons.

History.

The seventh and eighth years of school also present an opportunity for the union of oral instruction and book study in the teaching of history. The use of a manual of history by the pupils

at this age presupposes that much valuable historical information, local and general, has already been taught. Such instruction, in the form of stories illustrating historical characters, may be given early in the course, and this may be followed by interesting descriptions of historical events. Much information of this character is presented in the readers and other books for youth, and much may be given in connection with the language exercises. It is to be kept in mind that all such information, whether presented in the form of story or description, must be reproduced by the pupils. They must be trained to tell and to tell well what they have learned.

Use of Book.

When the text-book is put into the pupils' hands, it will still be necessary to prepare them for its profitable study by oral instruction. There is not a chapter in any school history that young pupils can study with best results without preparatory instruction, and few events are so described that the living teacher can not throw needed light upon them, thus adding to the pupil's knowledge and interest. This needed preparatory instruction may often be given in connection with the assignment of the lessons for study, and the pupils' interest may thus be greatly increased. Besides, a school history presents at best a mere outline of historical knowledge, and this outline, often dry as dust to pupils, must be filled somewhat and made interesting by oral instruction and reading. The practical difficulty is to keep the oral instruction within proper limits.

The object to be reached in teaching history is not solely to impart historical information, but, what is more important, to give pupils the ability to read

books of history intelligently, and to create a taste for and interest in such reading. A sure way to defeat all these ends is to require pupils to commit to memory and repeat the words of the text—a stupid practice still too common in American schools. I know of no surer way to create in the pupil a strong dislike for history and a controlling distaste for all historical reading.

Elementary Period.

It is thus seen that during the elementary period of school training, oral instruction and book study may be effectually united, and that it is only by such union, in the proper time and manner, that the best results can be attained. It is also seen that the amount of oral teaching decreases from year to year, and the amount of book study increases. It remains to emphasize the fact that the last two years of this elementary period, especially, should give pupils considerable effective practice in book study, not only as a preparation for the work of the high school, but also for future self-education in case school privileges can no longer be enjoyed.

Their Union in High Schools.

Oral Teaching.

In the high-school period, the acquiring of knowledge from books is less difficult than in the lower grades, since the pupils possess increased ability to interpret written language, but even in the high school oral teaching is a necessary means of preparation for book study, this being specially true in the sciences and in history. In such sciences as botany, zoölogy, physics, and chemistry, the acquiring of clear primary concepts and ideas must

precede the study of books, and these can only be acquired objectively, *i. e., by the study of things.*

Science Teaching. In most high schools, the large number of pupils in a class, and the limited facilities provided, make such objective teaching and study difficult. The most promising beginning has been made in chemistry, and next, perhaps, in botany, but what has been accomplished in this direction is only a promising beginning. The attempt to teach the elements of these sciences from books is still a common error in high schools. Pupils in botany are studying the verbal descriptions of plants when they should be studying the plants themselves; and pupils in chemistry are studying descriptions of what they should be actually doing in the laboratory. It is in the teaching of the elements of science that the laboratory has its highest educational value. This training in physical science should be a continuation of the objective teaching of the lower grades, and, to this end, it should begin with and extend through the entire high-school course. When the study of a text-book in each science is undertaken, the way should be prepared and the study accompanied by proper oral teaching.

History. What has been said respecting the teaching of history in the last two years of the intermediate period applies, with little qualification, to the teaching of history in the high school. The needed instruction may often be given in the assignment of a lesson. One of the most successful teachers of history in high-school classes that the writer has ever known, usually took nearly half as much time in the assignment of a lesson as she did in conducting

the recitation. She not only made a complete analysis of the lesson for the guidance of the pupil's study, but she directed them to sources of information—to supplement the manual used—giving page as well as author, and when these were not within the pupils' reach she gave the information, if needed for intelligent study. Her pupils left the class knowing clearly just what would be expected in the recitation, and deeply interested in the subject before them. In all the other branches there will be found a place for oral teaching as a needed preparation for successful book study. The practical difficulty is in determining the place and amount of instruction needed.

Errors.

The errors to be avoided in the union of oral teaching and book study, especially in higher classes, include (1) the removal of the necessity of proper study by too much instruction, and (2) the requiring of pupils to master book lessons for which they have not been properly prepared. The general principle to be observed is that assistance should be given to pupils *only when it is needed.* It is a mistake to give such instruction in advance as will deprive pupils of the benefit and joy of mastering difficulties by their own efforts; and this is true whether mental discipline or abiding knowledge be the end sought. Every experienced teacher usually knows in advance what instruction, if any, is needed, and, instead of leaving his pupils to sure defeat, he will skillfully throw just enough light upon known difficulties to enable his pupils to overcome them with the feeling that the victory is their own. It is one thing to solve a problem for a pupil and rob him of the sense of victory, and quite another to assist him to solve it.

CLASSES OF TEACHING EXERCISES.

It has been shown that teaching embraces three distinct processes—instruction, drill, and testing. These three processes give rise to three equally distinct teaching exercises; viz, *instruction* exercises, *drill* exercises, and *test* exercises. In practice these three exercises are more or less united, this being specially true of instruction and drill exercises, which are closely united in the teaching of all school arts, and also when repetition or drill is necessary to deepen impression or increase the clearness with which knowledge is apprehended. The test exercise more frequently occurs by itself, and, when united with instruction or drill, it is usually the leading or characteristic exercise.

Lessons and Recitations.

These facts make it feasible to divide teaching exercises into two distinct classes, called *Lessons* and *Recitations*, the former including instruction and drill exercises, and the latter test exercises; and it seems desirable that this classification be universally recognized in school literature.

The term lesson is now very generally used to designate an instruction or drill exercise, or an exercise combining both instruction and drill.* It is common to speak of a lesson on plants, a lesson on insects, a lesson on climate, etc., the chief element in each ex-

*The term lesson is also used to denote the *subject* of study or instruction, or a task assigned for mastery. This is the meaning of the term in such expressions as "The lesson was well prepared," "The lesson assigned was too difficult," etc.

ercise being instruction. It is even more common to speak of a lesson in reading, a lesson in writing, a lesson in drawing, a lesson in singing, etc., exercises including both instruction and drill.

The use of the term recitation to designate a school exercise doubtless had its origin in the old practice of requiring the pupil to repeat or recite the words of the book as evidence of knowledge. The reciting of the pupil was accepted as a test, and so the recitation was originally a test exercise—largely a test of verbal memory. But the term has, for some time, been used more indefinitely to designate either a test exercise or a lesson, and it is sometimes used in as wide a sense as the term exercise. The term is, however, increasingly used to designate a test exercise, or an exercise in which the test is the chief element, and we accept this as a warrant for the limiting of the term to this use and meaning. It is believed that such use of the term recitation will increase a needed recognition of the test as an important means of school training.

It is only a few years since nearly all the class exercises in American schools were recitations, the lesson, especially the oral lesson, having a small place. Now the class exercises in many schools are nearly all lessons, and the recitation receives little attention. It is important that these two exercises be used as *complementary means* of school training, and, to this end, that they be properly subordinated and united. The manner in which this may be done has already been indicated in the union of oral teaching and book study, as previously described (p. 152)—the recitation following and testing results—but this will be made still clearer in subsequent pages.

THE LESSON.

A lesson may be defined as a teaching exercise whose aim is instruction or drill or both. When instruction and drill are united or blended in a lesson, the one is usually made subordinate to the other. In teaching those arts that involve manual or vocal skill, as writing, drawing, and singing, instruction is preparatory, and has a less prominent place than drill. Its aim is to give the pupil a clear idea of *what he is to do* and *how to do it*—knowledge needed for guidance, and the clearer the pupil's grasp of this guiding knowledge, the more fruitful will be his practice (p. 124). But, in imparting skill, knowledge must be supplemented by continued and persistent practice.

In teaching the art of language, instruction and drill are more equally blended, since knowledge must be acquired before it can be expressed. Language. Language is the expression of knowledge, and hence the learning of it as an art begins with the first acquisitions of knowledge, and runs through the entire course of education. Its mastery is so important that every lesson should be made a practical and effective drill in the use of language. It is not enough that the lesson aims to impart clear and definite knowledge; it should also train the pupil in the art of expressing such knowledge in clear and accurate language. This result can not be secured by a parrot-like repetition of the language of book or teacher. The pupil must be trained in the expression of what he knows in his

own language. It is true that there are in nearly all branches of knowledge important definitions and principles which, at the proper time, must be taught and memorized, but the memorizing of *scientific* language is exceptional work in elementary education. The first aim of a knowledge lesson is to lead the pupil to a clear apprehension of the truth taught, and the second is to train him in its clear and full expression.

Memorizing Language.

A child's mind should, however, be increasingly stored with beautiful and vital truths expressed in choicest language. Our English literature sparkles with gems which become a rich treasure in the memory. It has been urged that a child should never memorize language, the meaning of which he does not fully understand. The writer is glad that such a rule was not observed in his early training. There is much vital truth that we never fully comprehend until experience unlocks the meaning. This is specially true of religious truth, which we know at first only in part, and whose meaning grows clearer and richer with our years. The question involved is chiefly one of degree. It does not subvert the important principle of elementary teaching that the memory should wait upon the understanding.

Vocal Expression.

The lesson should also train the pupil in the natural and distinct vocal expression of knowledge. The pupil should be constantly trained in speaking in a pleasant, conversational tone, and with sufficient distinctness to be heard easily in any part of a room of ordinary size. It is well-nigh idle to drill pupils in distinct and natural tones in reading, if they are permitted to mumble or screech in their

other school exercises. The lesson should be an effective drill in proper vocal expression.

Methods in Lessons.

Since the particular method to be employed in giving a lesson will depend on the nature of the knowledge to be taught, and the mental condition of the pupils, it is not practicable to give detailed instructions for the teaching of any branch of knowledge. The teacher must determine for himself whether the knowledge in a given lesson can best be taught by objective, or indirect, or direct methods, and if the teacher have not wit enough to determine this fundamental question of his art, he will do poor work in attempting to follow prescribed methods. The so-called "model lessons" may be profitably studied by teachers as *illustrations* of true methods of teaching, but they should never be blindly repeated or mechanically copied as patterns. Carpets may be woven, garments made, and statues carved by pattern, but the human soul can not be unfolded, informed, and enriched by operatives following prescribed forms. The teacher must be an artist.

Objective Method.

One of the most common mistakes of untrained teachers is the attempt to use the objective method in teaching knowledge that can only be taught by other methods. This mistake may be avoided if the fact be kept in mind that the objective method can only be used in teaching objects of knowledge *that can be presented to the mind.* The elements of objective knowledge must be acquired by direct perception or observation. There is a clear distinction

between objective teaching and illustrative teaching, which is often overlooked. An abstract truth may be illustrated by concrete examples, and even by graphic charts or figures, but this is not objective teaching. It is only when the concrete example is presented to the mind and knowledge is reached by its study that the method of teaching is objective.

Inductive Method.

Another common mistake in giving lessons is the attempt to teach by the inductive method knowledge which can only be taught directly. The facts of history and biography, and some of the facts of geography and other elementary branches, can only be taught directly, and the attempt to teach such knowledge by inductive or other indirect process is a waste of time and effort. When the writer has seen this wrong use of the inductive or drawing-out method, he has often been reminded of his boyhood experience on the farm in attempting to pump water from a well by means of a leaky pump. He first poured water in, and then springing to the pump-handle vigorously pumped the water out again. After several such attempts he would succeed in lifting the water in the well above the pump-valve, and then quick work would fill the bucket with cool water. The illustration fails in one particular. In pump-handle teaching no knowledge is drawn out that is not first poured in, while, in the case of the pump, the water poured in did assist in pumping water from the well.

Direct Method.

But the more common error is the use of the direct method when the indirect or objective methods can be successfully employed. Whether mental training or knowledge be the end, the

indirect method is incomparably superior to the direct, and hence, when practicable, the indirect method should always be used. No elementary branch of study affords a better opportunity for indirect oral teaching than arithmetic. All of its definitions, principles, and rules can be best taught inductively. It is a cardinal principle of elementary teaching that the pupil should never be directly told what he can easily be led to see or find out for himself.

Analysis and Synthesis. The above remark respecting the determining of particular methods of teaching applies to the use of analytic and synthetic processes. These two processes are not only closely united in teaching all knowledge, but it is not possible in teaching any branch to make either uniformly the initiative process (p. 138).

United in Reading. Both analysis and synthesis are used in teaching reading, and even in teaching words, sometimes the one being the initiative process, and sometimes the other. Words may at first be taught as wholes, and then separated into their letters or sounds. This is the analytic method, the analytic process being the initial. When pupils have by practice associated the sounds or phonic powers of letters with their forms, they may be wisely taught "to make out" new words by synthesizing the phonic elements which compose them. This is the synthetic method of teaching words. Pupils may also be taught to divide certain printed words into syllables, and then to synthesize these syllabic elements into the spoken words, thus uniting the analytic and synthetic processes. This union of syllabic analysis and synthesis is

an important step in the teaching of words. The reading of a sentence or paragraph is a synthetic process, but the thought may often be made clearer by analyzing the sentence, and giving special attention to the words or groups of words of which it is composed.

Synthesis and analysis are, in like manner, united in the teaching of language. The expression of thought is a constructive process, and hence is synthetic. This is obviously true of the expression of thought by written language. The writing of a word, a sentence, or a paragraph is necessarily synthetic, and the same is true of the construction of sentences in speech or conversation, though the thought expressed may have been reached by analysis. Synthesis also prepares the way for analysis in teaching the relations of words in the sentence, the analysis of what has been composed or synthesized by the pupil being easier, and at first more helpful, than the analysis of sentences composed by others. Synthesis and analysis should be conjoined in the teaching of grammar (p. 255).

United in Language.

In like manner analytic and synthetic processes are united in teaching geography, some of its facts being best taught analytically and others synthetically. Synthesis is usually the initial process in teaching home geography, including the geography of one's neighborhood, county, and state, but when a country is represented by a map, the initial process is analytic. The earth may be represented by a globe or map, and its great divisions and leading features taught analytically. There is no advantage in teaching in succession the several grand divisions and

United in Geography.

oceans, thus reaching a knowledge of the earth's surface as a whole by synthesis.

United in Arithmetic.

This union of analytic and synthetic methods also occurs in the teaching of arithmetic. The principles of numbers are best taught by induction, and the rules by generalization, both synthetic processes, while the problems may generally be solved by analytic processes. It may be stated as a general principle that the deductive truths and processes of mathematics are best taught by analysis, and inductive truths and processes by synthesis.*

Union of Different Processes.

These illustrations suffice to show that only general directions can well be given respecting the use of particular methods in teaching. The teaching of the facts involved in a single lesson may require the use of different processes. The teaching of scientific knowledge to advanced pupils may not only reverse the order of the processes involved in teaching the elements of knowledge to young children, but may give prominence to processes little used in elementary training. This brings us back to the truth, already stated, that *teaching is an art*, and not a mechanical routine. Skillful teaching requires a clear knowledge of guiding principles, a quick insight into determining conditions, and a ready adaptation of means to ends.

The several methods of giving lessons to pupils *in classes* will be clearly indicated in the subsequent discussion of methods of conducting recitations.

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* This is not inconsistent with Hamilton's statement that "the first procedure of mind in the *elaboration* of its knowledge is always analytical."

THE RECITATION.

The recitation may be defined as a teaching exercise whose chief aim is to test the knowledge or power or skill of pupils, and since this testing sustains a close relation not only to other teaching exercises, but also to the pupil's study and learning, the recitation is a very important exercise. If it be thorough, searching, and inspiring, the pupils' efforts will be vigorous and earnest, but if its tests be haphazard and superficial, their study and preparation will have the same characteristics. As a rule, the study of the pupil, both in extent and character, never rises above the requirements of the recitation (p. 147).

It now remains to consider more definitely the objects or aims of the recitation as a test exercise, and the ways in which it may be made efficient.

Objects or Aims.

Testing Knowledge.

The recitation assumes that appropriate instruction, drill, and study have been employed, and it seeks to test the results. Its first object is *to test the pupil's knowledge*, and, to this end, it must search the pupil's understanding. If the recitation fails to test the pupil's comprehension of knowledge, it fails in an essential function.

As a means of thus testing knowledge, the recitation must require its full and accurate expression. Such an expression of knowledge is the only evidence of its possession that can be accepted in the recitation. It

may be true that a pupil may know more than he can tell, and it may also be true that he can tell more than he knows—the first fact being chiefly due to his inability to command words that express concepts and ideas in his mind, and the second fact being due to an ability to repeat memoriter language that expresses knowledge which he has not clearly apprehended. But whatever may be true in these respects, the recitation must assume that knowledge which can not be clearly expressed is indefinite and uncertain, and it must require such an expression as will disclose clear apprehension. Besides, since it is a prime function of the lesson to train the pupil in the clear expression of knowledge (p. 166), it is important that the recitation test the results of this training. Both the lesson and the recitation should recognize the fact that the power to express knowledge in clear and forceful language is one of the fundamental ends of school training.

Testing Power.

A second aim of the recitation is *to test the pupil's acquired mental power.* It has been shown that mental power is a more enduring and valuable result of teaching and learning than knowledge (p. 123), and it follows that the testing of this resulting power is an important aim of the recitation. It should test the pupil's ability to observe, to recall and reproduce, to imagine, to compare and analyze, to generalize, to judge, to reason, etc. Recitations in arithmetic should test the pupil's ability to apprehend numerical relations expressed in language, to reason analytically in solving problems, to reach rules and principles by inductive generalization, etc. The same is true of the tests in the analysis of language, and

of the tests of thought power in other branches. One of the most common defects of recitations is that they test the pupil's ability to repeat language and not his powers of observation and thought.

Testing Skill.

A third aim of the recitation is *to test the pupil's skill in school arts.* Skill is primarily manifested by action or execution. Skill in writing is tested by writing, in drawing by drawing, in reading by reading, in singing by singing, in composing by composing, in adding numbers by adding numbers. In the manual arts skill is also shown by the products or results, and the same is true of those arts in which results may be preserved in written form. It is, however, to be noted that the products or results of art effort manifest power and accuracy of execution more than readiness and facility. The written solution of a problem, the written analysis of a sentence, a written composition, a mechanical drawing, etc., may denote accuracy, but not rapidity or readiness of execution. It is for this reason that actual execution is a better test of practical skill than the results or products of past efforts, and, besides, the vocal and purely mental arts can be tested in no other way.

Recitation in Teaching Art.

The testing of skill is so readily united with the drills for imparting skill that the recitation as such has a less distinct and prominent place in teaching art than in teaching knowledge. There is, however, great advantage in separating the recitation from the drill proper even in teaching art. It is one thing to conduct an exercise with skill as the sole end in view, and quite another to conduct a drill with testing prominently in mind. The test fetters both

instruction and drill, and largely robs them of their freedom and power. Neither the instructor nor the trainer can do his best with a pencil in hand to record results. The confused mixing of the recitation and the lesson has been a great weakness in school training, and it may be added that the so-called "marking system" has been a serious obstacle in the way of effective teaching. The making of the test, with its record of results, a separate exercise would do much to remove these weaknesses.

Union of Exercises. It is not meant that it is either practicable or desirable to separate the test completely from instruction and drill in class exercises. On the contrary, the searching test may not only disclose the necessity of throwing more light on an obscure point, or making clear an imperfectly understood truth, but it may present the best possible opportunity for such incidental instruction. It may also present an equally favorable opportunity for added drill to deepen impression and fix a truth more clearly in the memory. The practical difficulty is in keeping such incidental instruction and drill within proper limits. It is liable to run away with the recitation if not kept under firm control. It is always a mistake for a teacher to permit instruction to crowd out testing in a recitation. It does not take pupils long to apply the doctrine of probabilities to determine the necessity of study, and too many pupils will take the chances if there be not well-nigh certainty that the results of their study will be tested. It must be kept in mind that the first and essential aim of the recitation is *to test*, and this aim should not be subverted by making the exercise chiefly a lesson.

It is also true that the test may be more or less employed in the lesson, especially in elementary schools, but it should be used incidentally, and as an aid to instruction or drill.

The importance of the recitation in school training justifies a careful consideration of the merits and defects of the methods of conducting recitations commonly used in American schools. These may be divided into two classes; viz, *methods of testing pupils*, and *methods of calling on pupils to recite*.

Methods of Testing.

There are two distinct methods of testing a pupil's knowledge*—the *catechetic* or *question* method, and the *topic* method, the first presenting tests in the form of questions, and the second in the form of topics. Question tests are more definite and usually require a briefer statement or answer than topic tests. A topic may only indicate the general character of the knowledge sought, and, as a rule, the more general a topic, the less definite and searching it is as a test. The recital of a topic may involve its analysis, and the arranging of the several sub-topics in logical order. This is the analytic phase of the topic method.

Let us now consider the merits and defects of these two methods of testing in order to determine their comparative value and proper use.

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*In order to make this discussion as definite and practical as possible, it is here limited to methods of testing knowledge, but it will be seen that the principles and processes involved also apply to the testing of power and skill, at least so far as these can be shown by language.

I. The Question Method.

The chief merit of the question method of testing is its *thoroughness*. There is no test of knowledge as searching and thorough as a skillful question. A very superficial knowledge of a subject will enable a pupil to talk on or about it, but the answering of a series of well-directed questions is another matter.

Merits.

The question method also permits a *systematic unfolding of a subject*. It not only gives the teacher control of the order of the topics, but also of the included facts, and he can thus give due prominence to the more important and fundamental. The practical value of this feature is too obvious to justify elucidation.

The question method also permits the imparting of needed *incidental instruction* with comparatively little sacrifice of the efficiency of the recitation as a test. When searching questions show that explanation or information is needed, the pupils are in a favorable condition to receive it, and it may often be given in few words, and thus lessen but little the efficiency of the recitation as a test.

To secure the above advantages the questions used as tests should be *clear*, *concise*, and *definite*. The first step in answering a question is its clear comprehension, and hence it should be stated clearly and in the fewest possible words. An ambiguous or wordy question occasions hesitancy and confusion, while an indefinite question invites a loose and pointless answer. As a rule a question should

Nature of Questions.

be as accurate and definite as the answer which it solicits.

The questions used in recitations should be so arranged as to unfold the subject *in a logical order*—a very important matter. The order in which a subject is unfolded may make the pupil's knowledge clearer and more permanent, or it may confuse and muddle it. The teacher's tests should be logically arranged and systematic.

All questions that suggest the answer, technically called leading questions, are worthless as tests, and should be carefully avoided. The same is true of questions that can be answered by "yes" or "no." The pupil, whatever may be his ignorance, is more likely to answer such questions correctly than incorrectly. The manner in which the question is asked, the suggestive look of teacher or fellow-pupil, conscious or unconscious, or some other hint, may make correct guessing quite easy. It usually takes a very dull pupil to miss a "yes-or-no" question. It may be added that the practice of helping pupils in recitations by leading questions or otherwise is pernicious. It deceives the pupil respecting his ignorance, and begets bad habits of study. The recitation is primarily a test, and as such it should hold the pupil rigidly to its requirements.

Defects of Method.

The chief defect of the method of conducting recitations by questions is its failure to test satisfactorily the pupil's *power of expression.* This defect may be partly overcome by requiring pupils to give full and complete answers, but even this is more or less inadequate as a test of expression. Many of the answers received in our schools consist

of a single word, or two or more words not forming a sentence—answers admissible in rapid reviews, but not in testing. In the recitation pupils should, as a rule, be required to answer questions in complete sentences. It is certainly not a good practice for a teacher to use more words in asking questions than pupils use in answering them.

Another defect of the question method is its failure *to necessitate systematic thought.* The order of topics being determined by the teacher's question, the pupil is relieved from the necessity of analyzing the subject and arranging his knowledge of it in a systematic manner. This defect is greatest when the pupil's study consists in attaching ready-made answers to the printed questions in a book—a process about as mechanical as the fitting of pegs to holes of different sizes. A pupil may, for example, thus learn the answers to scores of questions concerning a given country without forming a conception of it. His knowledge is in fragments. The recitation should be so conducted as to necessitate a systematic arrangement of the pupil's knowledge. It is not enough for him to acquire knowledge as classified by another mind; the work of classifying and arranging must be done by himself, especially in the higher grades of school.

Art of Questioning.

It is thus seen that the skillful testing of a class of pupils by questions requires thorough knowledge and careful preparation by the teacher. The art of asking questions is not a simple art. It requires a clear and systematic knowledge of a subject, a ready command of good English, and a distinct and controlling aim. There has never been a more stupid practice in our schools than "the asking of questions

from the book"—now happily disappearing. The author's questions may be models in form and arrangement, but their use in the recitation degrades the teacher to a mere machine, and reduces his teaching to a mechanical and lifeless routine. The only proper use of such questions is to assist teacher and pupil in preparing for the recitation, the teacher in increasing his skill in questioning, and the pupil in testing his knowledge.

II. The Topic Method.

Merits.

The most obvious merit of the topic method is its value as *a test of expression.* In reciting a topic, the pupil is obliged to tell what he knows of it in successive sentences, and this is obviously a much better test of his command of language than the giving of brief answers to specific questions.

The topic method, when properly used, necessitates *systematic thought* in preparation. Recitations may be so conducted as to require pupils to arrange their knowledge of topics in some definite order, and more advanced pupils may be required to make in study analyses of topics, and to follow these in reciting. This affords an excellent training both in thought and expression.

The topic method requires a clear-headed, thorough teacher to use it with success. In the hands of a superficial teacher it often degenerates into mere talking, the pupils often failing to state what is most essential to be known, giving instead, comparatively unimportant details. Such recitations are exceedingly deceptive as tests, as experience has often clearly shown.

A comparison of the question and topic methods, as above presented, shows that they supplement each other, the one being weak where the other is strong, and *vice versa*. This fact suggests that the best results may be secured by the union of the methods in a practical manner. In higher classes this may be accomplished by permitting pupils to study and recite, in the main, on the topic plan, but frequently testing their knowledge by interjected questions. This may be readily done even in a recitation in geometry. As a rule, when a pupil's reciting fails to show a satisfactory knowledge of a topic, he should be plied with searching questions; and the teacher should be on the alert for opportunities thus to increase the thoroughness of the topic test. In primary classes the question method should be generally used, both for instruction and testing, and even in intermediate schools the topic method should be more widely used in reviews than in advancing exercises, especially in the lower classes.

Union of these Methods.

Methods of Calling on Pupils.

There are three quite distinct methods of calling on pupils to recite—the *Consecutive* method, the *Promiscuous* method, and the *Simultaneous* method. In the first of these methods pupils recite in consecutive order or "by turn;" in the second they are designated promiscuously by the teacher; and in the third they recite simultaneously or "in concert." The teacher should know the comparative merits of these different methods, and should be able to use each wisely and skillfully.

I. The Consecutive Method.

The first advantage of the consecutive method is its *rapidity*. Since the pupils recite in turn, no time is lost in designating the pupil who is to recite, and since each pupil knows just when he is to recite, he is prepared to recite promptly. It is true that the promiscuous method may be so used as to oblige pupils to be ready to recite, but the possibility that they may not be called on, causes, as a rule, some hesitation. In the turn method the pupils' time of reciting is a *certainty*, and hence they are not only on the alert, but are ready to proceed. Experience shows that more questions can be asked and answered in a given time when the consecutive method is used than when the pupils to recite are designated by the teacher.

Advantages.

Another advantage of this method is the fact that it is *easy for the teacher*. It relieves him of the necessity of selecting and designating the pupils to recite, and, so far as testing goes, his labor is thus reduced to asking questions or assigning topics, and then determining the correctness of the pupils' answers or responses. The recitation proper proceeds as mechanically and regularly as clock-work.

A third advantage of the consecutive method is the fact that *all the pupils have an opportunity of reciting*. No pupil is omitted. If the class is too large to permit all to recite at a given recitation, the next may take up the reciting at the proper pupil, and thus all are called on in due time, and all have an equal opportunity to recite, provided, of course, that the mem-

bers of the class take their places from day to day in a fixed or regular order. The importance of this advantage will be more specially considered in connection with the promiscuous method.

Defects.

The chief defect of the consecutive method is *its failure to necessitate close and universal attention.* The pupil reciting and possibly the one who has the next "turn," must give attention, but the others are not obliged to do so. When the pupils near the head of the class are reciting, those near the foot may or may not be following them. As soon as a pupil has recited, he can go a-fishing mentally until his "turn" comes again. A skillful teacher may, of course, so interest his class in the recitation as to secure close and undivided attention, but this is not a necessary result of the consecutive method. Universal attention is secured not in consequence of the method, but in spite of it.

A second weakness of the method, as generally used, is the fact that *it permits a partial preparation of the lesson.* The pupils near the foot of the class are tempted to neglect the part of the lesson which will be recited by the pupils near the head, and *vice versa.* When the old plan of having pupils read one "verse" each prevailed, many pupils counted the verses, and studied only the one which they would read, and this practice still exists not only in schools, but even in some colleges where students recite in turn. As a rule, pupils will study most faithfully that portion of the lesson which they *expect* to recite, and the turn method permits this expectation.

This defect may be obviated by not following the order of the text-book in asking questions and assign-

ing topics, but much more effectively by having the reciting *begin from day to day at different positions in the class.* If the recitation begins with the third pupil one day, with the tenth pupil the next day, the sixth pupil the next day, and so on, no pupil, when preparing the lesson, can even guess what portion of it will fall to him to recite, and hence he is only safe when he has prepared the entire lesson. This device works best when all the pupils of a class recite daily.

Another defect of the consecutive method is the fact that *it prevents the most thorough testing of a class.* The tests which by turn fall to the different pupils may not be those which best disclose their knowledge of the subject. The revolving recitation may, for example, bring to an idle pupil the only question or topic which he can recite, and he may thus be tempted to trust to luck next time, the idle being very easily tempted. The wise teacher usually knows where to throw his tests to disclose ignorance or neglect of study. The highest efficiency of a recitation depends largely on a skillful distribution of its tests.

II. The Promiscuous Method.

Merits.

A study of this method of calling on pupils to recite shows that its merits and defects are respectively the inverse of those of the consecutive method. Its most obvious merit is the fact that *it secures and holds the attention of all the pupils in a class.* It is true that this result depends somewhat on the skill of the teacher, but the method both permits and favors the highest success. When a topic or question is announced, every pupil is obliged to

be on the alert, as he may be designated to recite. He must also give attention to the pupil reciting, as at any moment, he may be called upon to correct errors, supply omissions, or complete the recitation, and this is specially true when the teacher frequently calls on pupils to complete the recitation of another, taking it up precisely at the right point. This may be readily done in recitations in arithmetic, particularly in the oral solutions of mental problems, and also in history, reading, physiology, and other branches. This advantage of the promiscuous method is wholly lost when the pupil to recite is designated *before* the question is asked or the topic assigned, as is frequently done by teachers who have never made a special study of method. The test should first be submitted to the class, and there should not be even a prior glance at the pupil to be called on to recite.

A second advantage of this method is the fact that it permits *a proper distribution of tests*. The tests can be thrown by the teacher just where they will prove most effective and do the most good. The idle pupil may be given full opportunity to show the results of idleness; the pupil who was assisted yesterday, may be called upon to recite in review; any want of attention may instantly be corrected, etc. The recitation may be made a thorough test, and the pupils be incited to a faithful preparation of the entire lesson.

Mental Drill.

A skillful use of the promiscuous method makes the recitation a fine mental drill—an excellent mental gymnastic. Suppose, for illustration, that a class in arithmetic, containing twenty pupils, solves twenty problems in a recitation. If the recitation be so conducted as to require each pupil to

solve but *one* problem, the recitation would necessitate but *twenty* mental solutions. But by the use of the promiscuous method each pupil may be obliged to solve mentally all of the twenty problems, and the recitation would thus necessitate *four hundred* mental solutions.

Defects.

The promiscuous method is less rapid than the consecutive, it is not so easy for the teacher, and it requires very skillful use to afford pupils an equal opportunity to recite. This last defect is most serious in large classes, the teacher being liable to omit some of the pupils. The writer has known classes in which it often happened that some of the pupils did not have an opportunity to recite for several successive recitations. The result was a loss of interest on the part of the omitted pupils, and a neglect of study. Few pupils will thoroughly prepare lessons, if there is even a probability that they will not be called on to recite. The most faithful study is secured when every recitation tests the preparation of each pupil in the class. Some teachers are unconsciously in the habit of assigning the greater portion of a recitation to a few pupils, omitting almost wholly the others. Easy and superficial teachers are apt to assign the more difficult questions or topics to the brighter pupils, and the easier to the dull and backward. A "severely thorough" teacher, on the contrary, is liable to fall into the opposite error, and overwhelm the more backward pupils with all the difficulties of the lesson, and most of the reciting. Dull pupils are sometimes omitted purposely, this being most likely to occur when visitors are present, as in public examinations. The temptation on such oc-

casions to call only on the brightest pupil is too strong for many weak teachers to resist, and, for this reason, the public exercises in our schools are sometimes worse than shams.

Various devices have been resorted to by teachers to obviate the defects of the promiscuous method and increase their skill in its use. One of these is to write the name or number of each pupil in a class on a small card, thus using as many cards as there are pupils. At each recitation the cards are mixed and dropped in a box, or put in a pile on the table. The pupils to recite are selected by taking cards from box or pile. The writer obtained this plan from Horace Mann. It works quite well in advanced classes with long recitations, and especially if the teacher *frequently* takes a card from those already used, thus holding the attention of those who have recited.

Devices.

Another device is to put all the numbers of the members of the class on one card, arranging the same in the form of some geometrical figure which will permit the calling of the numbers on successive days in different orders. The writer devised and used this plan years ago with great satisfaction. It leaves the teacher free to sit or stand during the recitation, to move about the room and occupy different positions. When the recitation closes, the teacher knows what pupils, if any, have been omitted, and by frequently calling on pupils without reference to the card, the attention of the entire class is held.

But since the promiscuous and consecutive methods supplement each other, the easiest plan of avoiding their respective defects is *to combine them*. This may

be done by permitting pupils to recite by turn *except* when the teacher designates another pupil. If these exceptions are sufficiently numerous, the attention of the class will be as universally held as by the promiscuous method. The most skillful teacher of oral spelling we have ever known, combined these methods. The words passed rapidly down her class except when she "threw" pronounced words to other pupils, and this was done so frequently and skillfully that no pupil felt safe in taking his eye from her. When the recitation closed, every pupil had been tested, and the poor spellers and the listless, idle, and careless had received special attention. A little practice will enable any skillful teacher to combine these methods successfully.

Union of Methods.

III. The Simultaneous Method.

There may be a doubt respecting the propriety of including the concert method among the methods of testing pupils. At best, it can only test a class as a whole, and, to make this possible, there must be verbal uniformity in the answers, and then it becomes a test of verbal memory—not of the understanding. Even within these narrow limits, concert reciting is a poor test, since it fails to show how many or what pupils possess the knowledge or skill tested. The responses of the class may be led by a few pupils, even by one pupil, and the rest may mechanically follow, and all this may be done in such a way as to make it difficult to detect the leadership or the following. Many teachers have been thus deceived respecting the progress made by their pupils.

Defects as a Test.

They have accepted the glib and confident responses of their classes in concert as evidence that the individual pupils actually possess the knowledge thus expressed; and not a few teachers, who use the method much, have been surprised at the disclosures of ignorance made by written tests, or by the oral examination of individual pupils.* The truth is that the concert method has a very limited use as a means of testing.

Their Use in Lessons. It may be added that the above methods of conducting recitations may be successfully used, with some modifications, in giving lessons (p. 166). The essential thing in all class exercises is to arouse the interest and hold the attention of all the pupils. This can only be done by occasioning the continued and constant activity of the minds of the pupils. It is not what the teacher says or does that tells, but what the pupils learn, and they can only learn by their own activity (p. 111). The concert method may be sometimes used with good results in class instruction and drill exercises. It may be occasionally employed to arouse attention and awaken interest, and also to fix a truth, and especially its exact statement,

* This weakness of the concert method was fully disclosed in the once famous Lancasterian schools, in which large classes of children were instructed, drilled, and tested in concert. They made surprising progress apparently, their noisy responses indicating almost universal knowledge of what had been often repeated. The suggestion that the pupils be *individually tested* was acted upon, and the results showed that the great majority of the pupils could not even repeat alone what they so glibly recited together, and that they were wofully ignorant of what had been verbally repeated. The popularity of these schools soon declined.

in the memory. It may be generally employed in drills in singing, and, to a limited extent, in reading drills. When a sentence is clearly understood, there is often great advantage in having a class give vocal expression to the thought in concert. It is often possible thus to secure a free and clear expression, not otherwise possible to secure from some of the pupils. The voices of other pupils not only guide and support the timid and hesitating, but, what is more important, they are thus inspired with confidence and can do their best, as is also true in the singing of difficult passages. But the concert drill should be sparingly used even in teaching reading, and it should always be accompanied and succeeded by the individual drill.

Abuse of Concert Method.

But the concert method has been so widely and sadly abused in elementary training that it would seem wise to discountenance its use altogether. The writer has visited primary schools in which all the lessons in reading and spelling, tables of numbers, of weights and measures, etc., were recited not only in concert, but in sing-song, quasi-musical tones, at once distressing to the ear and stupefying to the mind. There is no speedier process for reducing a bright child to stupidity than a vigorous use of the hum-drum concert drilling, which was once so nearly universal in primary schools, even in large cities. A few years ago a friend, who had musical gifts, visited the primary schools in one of the largest cities in the country, and indicated the tones used in different concert exercises by a semi-musical notation!

It seems unnecessary to add that much concert reciting injures the voice, both for speaking and singing. The resulting "primary tone," as it has been called,

is often heard in the pulpit, at the bar, and in the forum, and much of the best drilling in reading in the upper grades of school aims to overcome or remove the bad habits acquired in the lower. If concert exercises are ever employed, special pains should be taken to keep the tones natural and pleasant. It is in place to add that the boisterous, discordant yelling, which is encouraged in too many schools as "singing," is injurious to the singing voice and subversive of musical taste. There should be increasing attention given in elementary schools to the quality of children's voices both in reading and singing.

WRITTEN EXAMINATIONS.

Written Exercises.

There has been no change in school training in the past thirty years more marked or general than the use of written exercises. This change has occurred not only in the higher grades of school, but even more notably in elementary schools. Pupils are now very generally taught to write from the beginning of the school course, several years earlier than was formerly permitted; and the skill in writing, thus early acquired, is utilized in many ways. Writing in some form accompanies and largely enters into the training in reading, spelling, language, numbers, and nearly all other branches. Skill in writing is no longer the end of the writing exercises in school, but it has become a means of training—an important means in nearly all school work. The slate and pencil are now a necessary part of the primary pupil's outfit, and their use is required not only in the work and study of pupils in their seats, but also in class exercises.

It is becoming a somewhat serious question, one demanding careful attention, whether written work has not too large a place in some elementary schools, not only for the best mental training, but more especially for the physical health of pupils. The writer shares the fear, expressed by many thoughtful observers, that the pupils in many graded schools spend too much time in the use of pencil and pen. It is believed that the almost constant use of slate and pencil for several hours daily is a serious tax on the nervous system

of young children and that the cramped positions, thus occasioned, interfere with the free action of the lungs and other vital organs. It is certainly a serious mistake to keep a young child at work with slate and pencil for the sake *of keeping him busy*—the usual plea of teachers when their attention is called to this evil. It is not too much to claim that the total amount of slate or tablet work required of primary pupils should not exceed two hours a day—divided into, say four, separate periods of not more than thirty minutes each; and that intermediate pupils should not use pencil and pen over three to four hours daily, and this use should not be continuous. The amount of written work may properly increase as pupils pass up in the grades.

Writing in Preparing Lessons.

There is certainly no justification for the requirements of many schools that nearly all lessons shall be prepared in writing. It is the practice in some schools to require pupils to write out (often in set forms) the analyses of mental problems in arithmetic and sentences in grammar, rules and definitions in both, tabulated or outline descriptions in geography, etc., and all this in addition to language exercises, written work in arithmetic, spelling, etc. The amount of written work thus annually required of pupils in the mastery of the several branches, would make a bulky book, if printed. Writing has a proper and useful place in school work, and the writing out of an analysis, rule, or outline, may be wisely required as a part of the preparation of a given lesson, but a distinction should be made between the use of a given means to secure a *special* result, and the habitual use of such means as a part of a general method of work. The amount of written work re-

quired of pupils in a given branch should have intelligent reference to the amount required in other branches. The total energy usable in writing should certainly be considered when assigning written exercises to children. A keen observer need not remain long in some of our schools to observe the "fidgety" condition of a number of the pupils while preparing written work, and many thoughtful parents are watching with solicitude the home study of their children, who sometimes act as if they would "fly to pieces," as a nervous girl once expressed her feeling. It is certainly high time to call the attention of superintendents and teachers to the dangers involved in the indiscriminate and excessive use of pen and pencil in elementary schools.

Written Tests.

With this caution respecting the overuse, if not abuse, of the pen in school work, we now proceed to consider the place and value of the *written test.* It may be used, to a limited extent, in the daily recitation, and increasingly as we ascend in the grades. The written test has long been used in teaching spelling, the written processes of arithmetic and algebra, and it is now increasingly used in teaching language and other branches. It may be effectively used in final reviews where the recitation needs to be more incisive than comprehensive. What are usually called "written reviews" are only written tests applied to the successive portions of a subject, gone over more thoroughly and fully when advancing. The topic method of reviewing subjects affords an excellent opportunity for this use of written tests, especially in the reproduction of analytic outlines to serve as a basis for the fuller oral recitation.

But the written test may be wisely used as a final review of a subdivision of a branch of study. Nearly all the branches of knowledge taught in the schools are composed of several more or less closely related subjects, which are sufficiently distinct to permit their successive mastery. Arithmetic, for example, includes the several fundamental rules, fractions, decimal fractions, United States money, denominate numbers, percentage, etc., and like subdivisions are found in geography, English grammar, history, physiology, etc. When pupils have gone over one of these subdivisions, and are supposed to be well prepared to advance to the succeeding one, it is very profitable to subject them to a searching written examination, and the same is true when they have completed a branch of study. Such tests afford pupils a tangible and reliable measure of their progress and condition—an important assistance. It is a common failing of pupils to overestimate their acquirements, and this is true even when their knowledge and power are subjected to searching oral tests in the recitation. The pupil who fails in an oral test, may comfort himself with the belief that his classmates would likewise have failed on the same test, but there is no opportunity for such delusion in the written examination, in which all pupils have the same tests, and, when strict honesty is secured, an equal opportunity to meet them.

Final Reviews—Subdivisions.

Failing of Pupils.

But this failing is not confined to pupils. Teachers as a class overestimate the progress of their pupils, and the more superficial the teacher the greater this failing. Written tests greatly assist the teacher in correcting this tendency. They

Failing of Teachers.

not only disclose the actual condition of his pupils, but defects in his teaching, not revealed even by the recitation—and this is specially true when the teacher has not prepared the questions submitted as tests. What an eye-opener a searching written examination would be in schools where teachers talk and explain much, and the pupils recite very little; where the instruction is given largely in the form of running talks without a halt to test results!

Uses and Value of Written Tests.

It is thus seen that the written test may be wisely and profitably used in recitations in spelling and arithmetic, and, to a limited extent, in other branches, especially in reviews, and that it may be used, with special advantage, at the completion of the several subdivisions of all branches of study, and at the completion of each branch. When thus used as an aid to teaching and study, the written test has several special advantages. It is more impartial than the oral test, since it gives all the pupils the same tests and an equal opportunity to meet them; its results are more tangible and reliable; it discloses more accurately the comparative progress of the different pupils, information of value to the teacher; it reveals more clearly defects in teaching and study, and thus assists in their correction; it emphasizes more distinctly the importance of accuracy and fullness in the expression of knowledge; it reveals more fully than the ordinary language exercise the ability of the pupil to write correctly when his attention is directed to the thought or subject-matter; it is at least an equal test of the thought-power or intelligence of pupils, since this result, in both methods, is dependent upon the nature of the tests; and, lastly, the certainty of

the coming written test affords a healthy stimulus to pupils, increasing their attention to instruction, and their efforts to master the subjects taught. It is, of course, possible for a teacher to neglect or slight the recitation proper, and make a hobby of the written examination, a frightful bugbear to sensitive pupils, and the source of rivalry, worry, overstudy, and other evils; but we are now considering the written test, not as a substitute for the oral test, but as supplementing it in the current work of the school, and used in the same spirit and with equal common sense. When thus used, the written test is a most valuable means of school training. It is not only in harmony with the freest and most rational teaching, but may be made a valuable aid to such teaching—a fact attested by the experience of the most progressive and skillful teachers of the country.

It seems unnecessary to add that it can not be made a universal test. It can not test power or skill which is expressed by the voice, as in reading and singing, and it can not measure the power of the conscience and other moral forces in the life. Its use has other obvious limitations.

We are now prepared to consider a related but a very different question; viz, *the propriety of making the results of written examinations the basis for the bestowment of scholastic rewards and honors, for the promotion and classification of pupils, and for determining the comparative standing or success of schools and teachers.*

As soon as the value of the written test as a means of ascertaining the attainments of pupils was deter-

mined, it was widely and increasingly adopted by boards of education and superintendents as a basis for one or more of the above ends, and especially for the promotion of pupils. In some schools, promotions were made on the results of an annual examination, this being generally true of promotions to the high school; in other schools three such examinations were held each year, one at the close of each term; other schools had six examinations annually, one near the middle and one at the close of each term; and not a few schools adopted the plan of monthly examinations, with a general examination at the close of the year. Whatever the number of examinations held, the results were generally estimated on a scale of 1 to 100 and tabulated. These "per cent tables," as they are widely called, were made the basis of the promotion and classification of pupils, often the only basis, and in many cities and towns they were used as a means of comparing schools and teachers. It was once not an uncommon thing for superintendents to publish the percentages of correct answers credited the individual pupils, and more frequently the average percentages of classes in the several schools. These tables thus came under the inspection of the patrons of the schools and others interested in them, and thus became a sort of public standard for determining the efficiency of teachers.

Written Examinations.

No one familiar with graded schools in cities need be told that these several uses of the written examinations (especially the last) have been the prolific source of bitter jealousies and rivalries between schools and teachers, and that they have otherwise been attended by serious evils. They have

Resulting Evils.

perverted the best efforts of teachers, and narrowed and grooved their instruction; they have occasioned and made well-nigh imperative the use of mechanical and rote methods of teaching; they have occasioned cramming and the most vicious habits of study; they have caused much of the overpressure charged upon the schools, some of which is real; they have tempted both teachers and pupils to dishonesty; and, last but not least, they have permitted a mechanical method of school supervision.

It is not asserted that these results, especially in the degree here indicated, have universally attended the adoption of the "examination system." These tendencies have been more or less effectively resisted by superintendents and teachers, and they have been measurably offset, in some instances, by other measures, as the considering of the recitation record of pupils; but the testimony of educators, competent to speak, confirms the writer's experience and observation, and shows that the above indictment of the system, when used for the purposes named, is substantially true. In the very nature of things the coming examination with such consequences must largely determine the character of the prior teaching and study. Few teachers can resist such an influence, and, in spite of it, teach according to their better knowledge and judgment. They can not feel free, if they would. The coming ordeal fetters them more or less, whatever may be their resolutions, and many teachers submit to it without resistance; and this is sometimes true of teachers who have been specially trained in normal schools, and are conscious of the power to do much better work. They shut

their eyes to the needs of the pupil and put their strength into what will "count" in the examination.

Illustrations.

The principal of the first grammar school in one of the largest cities in the country once said, in response to the inquiry why so much time was devoted to the memorizing of dates in history and rules in mensuration:

"My success as a teacher is measured by the per cent of correct answers my pupils give to the series of questions submitted in the examinations for promotion to the high school. Whatever qualifications these tests call for I must produce or fail. I can not stop to inquire whether my instruction is right or wrong. *I must prepare my wares for the market.*"

I have seen blackboards covered with "probable" questions, and classes meeting before and after school, to be crammed with set answers to them, as a preparation for a test examination.* I have known classes to memorize the names of all the bones in the human body, hundreds of dates in American history, and scores of the mechanical processes of mensuration, because these things were known hobbies of the ques-

*Supt. Henry F. Harrington, of Massachusetts, a competent witness, as well as one of the most thoughtful of educators, states it as a fact within his knowledge, that "grammar-school masters, where written examinations, tested by per cents, are in vogue to determine admissions to the high schools, systematically exchange with each other the list of questions which, from time to time, are propounded by several school committees or superintendents for those examinations, and paste them into scrap books; then they put their long-suffering pupils through the whole collection, and it is cram, cram, cram, until every unwonted form of question has been tried upon them, and its answer drilled into their memories, so that no novelty shall be sprung upon them when the next corresponding ordeal arrives."

tion-maker. I have known the instruction of an entire corps of grammar-school teachers to be largely concentrated on three or four test studies to the great neglect of other branches of equal, if not greater, importance. I have known principals to neglect the lower classes in their schools, and give their time and energies for weeks to the special drilling of their first class, the one to be subject to the comparative test for admission to the high school, and these pupils were thus fearfully overtasked.

Remedies. It is generally conceded that the evil effects of written examinations, above specified, are chiefly due either *to the character of the tests or to the uses made of the results*, and this fact suggests certain remedies.

Wide and Proper Tests. 1. Attention has already been called to the fact that school instruction and study are never much wider or better than the tests by which they are measured (p. 148), and hence the importance of making examination tests as wide as the approved course of instruction, and, to this end, both oral and written tests must be employed, the one supplementing the other. The questions employed should be a test of the pupil's knowledge of *subjects*, and not of his ability to repeat words—a test of his power to observe, to think, to reason, and to express what he knows. They should place training before cramming, and culture before technics. It is true that pupils will not give as high a per cent of correct answers to such questions as they would were the tests confined strictly to the text-book, every one falling within a prescribed course of instruction; but the examination will have the merit of determining the

knowledge and power of pupils, and especially of indicating *what they ought to know.* When classes reach an average of ninety per cent and upwards in a written examination, the fact may be usually accepted as evidence that both tests and instruction have been grooved, or that much time has been wasted in drilling the more backward pupils to the sacrifice of time and opportunity on the part of other pupils.

Non-comparing of Schools, Teachers, and Pupils.

2. Another remedy suggested is the entire giving up of the practice of using examination results to *compare schools and teachers.* An observation of this practice for years and in different cities has satisfied me that such comparisons are responsible for the worst results of the examination system, and this is especially true when tables of correct answers are published. These comparisons put a premium on special cramming and false teaching, and sometimes on downright dishonesty. They are generally unjust and misleading. The teacher who ignores higher motives and bends all his energies to secure a high per cent, is rewarded, while his fellow, who scorns to degrade his high calling to the preparing of "wares for the market," may be discounted, if not condemned. Besides, there is often a marked difference in the home training of pupils in the different school-districts of a city, in the number of pupils in the schools, and in other determining conditions for which the public, and even school officers, make no allowance. The teachers are unjustly measured by the per cent table.

I will go further and suggest that examination results should not be used for the public comparison of pupils. They are chiefly for the eye of the teacher

and superintendent, and it is sufficient if each pupil knows the results of his own effort. It is the practice in some schools to arrange the names of pupils in the order of their per cent standings, and then publicly read the list, or post it in a conspicuous place. I have never seen this done without feeling that the vanity of certain pupils was unwisely flattered, and the feelings of other pupils unjustly wounded. It is often true that pupils who stand high deserve less credit than those whose standing is much lower. As a rule, examination results should be neither publicly announced nor posted.

I would also urge that teachers should not use a coming examination as an incentive to incite their pupils to effort, excepting, possibly, in the case of indifferent pupils, and then privately. The nervous condition of pupils on reaching an examination is often the result of the teacher's indiscretion in holding it up constantly as a coming ordeal, in talking about "passing," "per cents," etc., as if these were the supreme ends of effort. The tendency of teachers to use a coming examination as a whip or spur to urge their pupils to greater application is one of the most serious obstacles to be overcome in the use of the system. A reliance on such a help is a misfortune for the teacher and a wrong to the pupil. It ought to be recognized as a school crime for a teacher thus to allude to an examination. It should be permitted to come unheralded. There should be no fuss over it or in view of it.

3. My next suggestion is that examination results should not be made *the only, if the chief, basis for the promotion of pupils*. It is now very generally conceded

that a pupil's daily success in school work should be as important a factor in determining his promotion as the results of one or more stated examinations, but it is urged by some that the examination papers are the best possible evidence of such daily success—that this is their design and import. There is truth as well as force in this view. The results of a proper examination will fairly represent the recitation success of three fourths of the pupils examined. I have never been much disappointed or surprised by the standing of my pupils in written tests. But the practical difficulty is *the failure of pupils to act on this truth.* When promotion depends on the results of written tests, possibly of a single test, the desire to stand creditably is reinforced by the fear of a failure "to pass," and, as a result of these united and intensified feelings, there is nervous excitement, morbid anxiety, overstudy, cramming, and other evils. These results would be largely obviated if the pupils knew *before* an examination that their daily success in study, the chief factor in their promotion, was settled; that nothing could set aside or take the place of their recitation record. Such an assurance as this would make the examination less a bugbear and more a helpful exercise, less a determiner of future advantage and more a guide and stimulus to future effort.

Other Bases of Promotion.

But how is this evidence of the pupil's daily success to be obtained prior to the examination? The only answer is, *by the recitation with its searching tests*, the necessary accompaniment of all successful school work; and this brings us back to the importance of the recitation as a means of teaching.

Recitation Record.

It is only necessary to consider briefly the manner in which a record of its results is to be kept. When the teacher is competent and trustworthy, such a record "keeps itself." The character of the pupil's daily work is carried in memory, and judgment is ready at any time to render a verdict. The teacher who can teach a class for a year or a term and not know the comparative success of the pupils in it, is to be pitied, if not retired. But most of our graded schools are under more or less direct personal supervision. In the smaller cities this work is done by the superintendent, who is able to assist the teacher, when necessary, to a true verdict, and the numerous tests to which the pupils are subjected from term to term, afford abundant data for such a judgment. In large cities, the teachers are under the immediate supervision of principals or local superintendents, who, in turn, are under the leadership of the general superintendent. Under these conditions there ought to be little difficulty in determining the recitation success of pupils, at least so far as this may be necessary to determine their right to promotion.

Marking System.

I hesitate to recommend the marking of recitations, since this so seriously curtails the freedom and power of both teacher and pupil, and so strongly tends to make the exercise text-bookish and narrow. It is true that this restraint is less when the marking is done at the close of the recitation, but this does not wholly remove the evil, since the thought of the record is present to both teacher and pupil, and thus restrains their freedom. At the best, there is little personal force or inspiration in a testing and recording machine (p. 175).

In my later teaching, I have made it a practice to record the class standing of students *at the close of each week* and *for the week*, and I have found very little difficulty in making a satisfactory record. The keeping of such a record takes comparatively little time, and, what is important, the record does not confront me in the recitation, and restrain needed freedom and enthusiasm. It seems to me that a weekly record of recitations is entirely feasible in all intermediate and high schools.

But whatever may be the means by which a pupil's success in daily work is arrived at, the pupil should know whether it entitles him, so far as it goes, to promotion. It is neither wise nor right to permit pupils to go into a final examination with the feeling that faithful and successful work will count for naught, if they should happen to fall below the regulation "per cent" in the written test.

Radical Remedy.

4. The above suggestions are not submitted as complete remedies for all examination ills, and so I feel constrained to add another; viz. *the non-use of the written examination as a basis for the promotion of pupils or for rewards of any kind.* This remedy, taken with those suggested above, is radical and comprehensive. It relegates the written test to the domain of teaching where its uses, as we have seen, are many and important. But I desire to add that this suggestion is not offered with the belief that so radical a remedy is necessary, or even expedient, provided the written examination be wisely used, and its influence on school work be properly guarded. The attending evils may certainly be so reduced as to cause no special anxiety, while the advantages of

its use may more than offset them. I am, however, fully satisfied that the instruction and training of many schools are in such deep examination ruts that no remedy will suffice but the non-use, temporary at least, of the system. Its evils have become chronic and self-perpetuating; they permeate and possess the schools, and only a radical treatment will suffice.

Uniformity and System.

It is admitted that a good degree of uniformity of attainment is essential to the proper classification of pupils, and that this can best be secured by the application of some uniform test, such a test as the written examination furnishes. It is also conceded that the non-use of the written test in the promotion of pupils would generally be attended with some loss in thoroughness of classification, but it is believed that this would be much more than made good by desirable gains in other directions.* The most pressing need of many deeply rutted schools is deliverance from the dominancy of routine and mechanism, such a vigorous shaking up as will prepare the way for a general movement away from rote and rut work to freer and more rational teaching and study, and more vital and inspiring supervision. If in this limbering and loosening process, the "system" should be disturbed a little and some items in its elaborate courses of instruction should be "knocked into pi," to use a printer's phrase, no serious harm would be

* The experience of a considerable number of cities, with excellent schools, shows that pupils can be safely promoted by the principal or superintendent on the judgment of teachers, and it has been suggested that when a teacher is in doubt, or a parent feels that injustice has been done in the non-promotion of his child, the case can readily be settled by subjecting the pupil to an examination.

done, and especially if accompanied by an inspiring call of teachers to higher and more thoughtful work. Uniformity and system are excellent, but in education it may be possible to have too much of these good things. A little loss in these directions would not, I am sure, cause the intelligent patrons of the schools to mourn, whatever may be true of the devoted worshipers of these presiding deities of the modern school. Besides, whenever the point of danger is reached, the written examination would always be available to check looseness and restore uniformity and system; and this suggests that there might be an advantage in dropping the examination bases every seventh year, thus having six years of system and one year of freedom, provided there be not too much regularity and system in this arrangement.

THE TEACHER'S PREPARATION.

The Teacher.

All that has been said respecting the principles and methods of teaching has presupposed the presence of a skillful and wise teacher. A method is but an orderly mechanism; its efficiency depends on what the teacher puts into it, and a teacher can never put into a method what he does not possess. In the last analysis, the vital element in teaching is the teacher. He is the soul of his methods and measures. If he is weak, they will be weak; if he is potent, they will be potent. It follows that children can not be properly educated by going through the forms of a philosophic system of teaching. The knowledge to be taught may be wisely selected and arranged, the successive steps may follow each other in natural order, and the entire mechanism may work with beautiful precision, and yet if the whole be not vitalized by the living teacher, the system will be a comparative failure. The more scientific a system of teaching may be, the more essential is the teacher. A routine of mere book lessons may be conducted by a blind plodder, who can turn a recitation crank, but a system of teaching that has for its grand aim the right unfolding and training of the mind and heart, requires the insight, the invention, the skill, the inspiration of a master in the teacher's office. We have been slow to learn that philosophic methods of teaching are only practicable to those who have some insight into their guiding principles.

In the light of these facts it is obvious that the teacher must come before his classes prepared to meet the high requirements of his art, and that this involves careful preparation—a preparation as wide as his duties. It should include not only a general prior preparation for the teacher's office, but in addition a daily preparation for every exercise. This daily preparation is quite as essential for the recitation as for the lesson, and the highest and most fruitful teaching is not possible without it.

Daily Preparation.

The teacher's preparation should include—

1. *A thorough and fresh knowledge of the subject-matter of the lesson.* He must have the subject in mind not in dim and shadowy outline, but in bold relief, with every essential fact and principle clear and distinct. His knowledge must not only be systematic, but *fresh*—the result of recent study. In the presence of his class the teacher has no time for attempts to recall the half-forgotten results of past study, or to pursue some new idea or suggestion to see whether it be truth or fiction, substance or shadow. Every power and energy of his soul is required to search through the minds of his pupils, to test the results of their study, and so to order his tests as to make the pupils' knowledge clearer, deepen their impressions, and make their view of the subject as a whole more distinct and permanent. All this requires *special preparation*—the interesting, informing, and invigorating of the mind by daily study. A young teacher once asked President Garfield, then of Hiram College, the secret of the art of arousing and holding the attention of pupils. The wise answer was: "See to it that you do not feed your pupils on

Knowledge of Subjects Taught.

cold victuals. Take the lesson into your own mind anew, rethink it, and then serve it hot and steaming, and your pupils will have an appetite for your instruction," and you will have their attention.

Use of Text-book.

When pupils use a particular text-book as the basis of their study, the teacher must make himself as familiar with the book thus used as he desires his pupils to be, otherwise he will not be able to give needed preparatory instruction wisely, to assign lessons properly, or to test the results of their study in the most effective manner. For the last purpose, he must not only know what is presented in the book for the pupil's mastery, but the order in which it is presented. It is not meant that the teacher should slavishly follow this order in unfolding the lesson, or that he should hold the pupil to the mastery of all the facts presented. Lessons should be so assigned as to relieve the pupil from the study of the unimportant facts which crowd so many text-books.

As a rule the teacher's knowledge of each lesson should be so familiar and accurate that he does not need to use a book in giving instruction or in conducting a recitation. The justifiable exceptions to this rule are in exercises in reading, spelling, the assigning of problems, etc. — exercises in which the *text* must be used as the basis. There are few practices in our schools more pernicious than the slavish use of the book in teaching pupils. It reduces the teacher to a sort of machine, places an obstruction between him and his pupils, represses enthusiasm, and renders the lesson or recitation mechanical and lifeless. A dependence on the text to determine the correctness of the pupils' answers is an evidence of incompetency too

palpable to be justified. It may be accepted as a general fact that the *minimum* of a teacher's use of a book in giving lessons and conducting recitations will be the *maximum* of his success. The teacher should come before his classes with a full mind, a free hand, and a free eye.

Principles and Methods.

2. The teacher's special preparation must also include the determining of *the principles to be observed and the methods to be employed in each lesson or recitation.* All that has been said in the preceding pages shows that the teaching of pupils involves a clear knowledge of their mental condition and ability, the nature of the knowledge to be taught, the proper methods of presenting such knowledge to the mind, the drill needed to deepen the impression and impart skill, etc.; and it follows that the consideration of these and other questions is a necessary part of the preparation required to teach successfully a given subject, or to conduct any teaching exercise. It is not possible to adopt a uniform method for the teaching of the successive lessons or subjects that make up a branch of study. Inductive knowledge must be taught in one way, and deductive knowledge in another. One lesson is best taught analytically, and another by synthesis. One lesson involves primary concepts that must be taught objectively, and another involves an appeal to and exercise of the imagination. The teacher can not take a step wisely until he knows just *what* he is to teach, since it is only in the light of this knowledge that he can determine the particular methods to be employed. There are determining questions to be considered in connection with the teaching of every lesson, and these can

not be answered once for all. They will recur every time the subject is to be taught, and with varying answers, for conditions not only change but insight and skill increase from day to day. The experience of yesterday throws its light on the work of to-day and the preparation for to-morrow. Skill in teaching can only be acquired by practice under the guidance of knowledge, and this guiding knowledge should be widened and verified by daily experience and study. Nor can the teacher in his preparation overlook those details which make up what may be termed the mechanism of class management, as the best mode of calling out and dismissing a class, the proper position for pupils to assume when reciting, etc., etc.

Assignment of Lessons.

3. When teaching involves the direction of book study by pupils and the testing of results, the teacher's daily preparation must determine *the proper assignment of lessons*—a most important duty. Much of the aimless study of pupils is due to the fact that the ends to be reached have not been clearly set before the mind. The knowing of what to do is no small part of the doing of it, and it is not much too strong to say that a lesson properly assigned is half mastered. The writer has sometimes gone so far as to claim that a very good estimate of a teacher's skill can be based on the manner in which he assigns lessons or tasks.

The proper assignment of a lesson involves a consideration of (1) the ability and advancement of a class, (2) the time available for study, and (3) the nature of the lesson. The frequent assignment of lessons which are beyond the pupils' ability to master, is sure to break down the spirit of study in any school. In

order to assign a lesson properly the teacher must know what it contains, and be able to estimate both the amount and degree of mental effort required to master it. He must also know the mental condition of his pupils and the time which they can conveniently and wisely give to its preparation. Then the lesson should be assigned definitely, and the requirements of the recitation be clearly stated.

It may be added that a faithful daily preparation for class exercises will increase the teacher's personal influence, heighten the interest and effort of his pupils, lighten the burden of their government, keep the teacher's mind fresh and vigorous, and promote his bodily health. It is believed that where there is one teacher in our schools failing in health on account of daily preparation for teaching, there are ten teachers failing for the want of it. Worry is the cause of more pale faces among teachers than work, and preparation for skillful and wise teaching is a good recipe for worry.

METHODS OF TEACHING SPECIAL BRANCHES.

It is the design of these pages to present methods of teaching particular branches as practical applications and illustrations of the principles and general methods of teaching previously considered. These special methods will not be given in detail for teachers to copy, but in clear outline and with sufficient fullness to guide intelligent teachers in determining the details of instruction.

READING.

When the child enters school, say at six years of age, he has a considerable stock of concepts and ideas acquired by observation, experience, and home instruction, and also a vocabulary of associated words which express and recall this knowledge. He has also discerned many of the relations between known objects, and has acquired more or less skill in expressing these facts in oral language, and much greater skill in apprehending them when thus expressed by others. He has also become familiar with many spoken words which either do not express any definite concepts or ideas or are associated with wrong

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ones (page 88). If brought up in an intelligent family, the child at this age has learned nursery rhymes, ditties, passages of Scripture, moral maxims and sayings, prayers, etc., all of which have given him a familiarity with many words in combination which, when used separately, express to him very vague ideas, if any.

Primary Pupil's Condition.

It is thus seen that the child enters school with a stock of clear concepts and ideas, and their associated words, but possibly with a still larger vocabulary of words which are either not associated with clear concepts or express wrong ones; and that he also has some skill in the expression of what he knows and feels, in oral language.

It seems obvious that the first steps taken in teaching a child to read should recognize *the above facts*, and that the first aim should be to teach the child to recognize by the eye words which he knows by the ear; *i. e.*, to know words as *forms* which he already knows as *sounds*. It is evident that the task of associating the printed word with the spoken word, so that the seeing of the former will call to mind the latter, is the simplest possible when the spoken word is already known and familiar.

Teacher's Duty.

It follows that the first duty of the primary teacher is to ascertain the mental condition and knowledge of her pupils—to learn the "contents" of their minds, if this be preferred—as a starting-point and basis for their instruction, and, in case several children are to be taught together, it is important to ascertain what concepts and words they

may know *in common;* and just here the teacher's chief difficulty begins. The children who sometimes crowd into a primary school, represent very diverse surroundings and home training. Some have a large vocabulary of words; others a meager stock, and these the simplest, often representing blurred concepts. Some can talk intelligently about many things; others have the ability to speak but a few simple sentences. If the children represent, as is often the case, both city life and country life, their differences in knowledge and speech will be still more marked. The country child will know many objects and their names, and many facts concerning these objects, of which the city child is ignorant; and, on the contrary, the city child will have a stock of concepts, facts, and words, of which the country child knows nothing. But whatever may be the difficulties involved, *the teacher must know her pupils* as a first and necessary condition of their right instruction.

First Steps in Reading.

Blackboard Lessons.

What has been said above leads to the conclusion that the first lessons in reading must be determined by the living teacher in view of the knowledge and condition of her pupils, and, to this end, *the lessons should be given by the use of the blackboard.* No chart or primer can take the place of crayon and board in these beginning exercises, and the only wise use that can be made of chart or primer is to supplement the board lessons. The most of the current charts and primers were prepared from the stand-point of the country child, and, as a result,

they contain concepts and facts quite foreign to the child whose days have been spent in the city; and, when this is not the case, the vocabulary of selected words is not the best for the teacher's purpose. But were the charts admirably adapted in matter to the pupils, there are still good reasons for the use of the blackboard. The words written before the eyes of pupils have an interest to them that no chart words can have, and they are more easily learned.

The use of the blackboard involves the question whether print or script, or both, should be used. If neither print-charts nor primer is to be used for a few weeks, it would seem best for the teacher to use script in her blackboard lessons, and to teach her pupils from the start *to write*. If script-charts are used, the pupils should write. When the proper time comes, the transition from script to print can be quickly made, as many experiments fully show, the similarity between script and print words greatly lessening the supposed difficulty. If, however, print-charts or primers are to be used in these first lessons, then both teacher and pupils should print, the reason being obvious.

Words exist as sounds and as forms, the first appealing to the ear and the second to the eye, and the first step in teaching a child to read is to teach him the written or printed forms of say thirty to forty words well known to the child as sounds or spoken words, and representing clear concepts or ideas. The words selected for this purpose should be the names of things, actions, and other phenomena that will

interest the child and thus afford a basis for interesting talks between teacher and pupils. It is not necessary or best to select only short phonetic words; they should be "children's words." The thing next to be done is to associate one by one the known spoken words with the unknown written words or forms, so that when the eye sees the latter, the concept or idea of the former and the related object will be instantly and certainly recalled.

Word Method.

How can this best be done? The spoken words have all been learned by the child as *wholes*, and this fact is the key to the teaching of the written words. They should be taught as *wholes* and *in the most direct and simple manner possible.* An attempt to teach them through their elements, whether sounds or letters, makes a simple process complex, and hinders the inseparable association of the written word with the spoken word and thus with the objects which they denote. Both reason and experience confirm this statement.

Use of Objects.

If the words to be taught as wholes have been wisely selected, there will be no necessity of presenting the actual objects, since they are already inseparably associated with the sounds, but, since the presence of the object is always an excitant or stimulus to the mind, it may be well to teach each written word by first presenting the object or its picture, or by such questions or conversation as will occasion its clear recall in memory. This will make the concept back of the spoken word vivid, and thus greatly assist the mind in associating the same with the written word. It seems to me to

be an error to attempt to associate the object directly and immediately with the written word. It is already associated with the spoken word, and the natural procedure is to use the spoken word in associating the object with the written word. The pupils should speak the word taught before it is written by the teacher on the board, and thus the crayon will "talk" after the pupils. The natural order of these steps is (1) the concept (object, if needed), (2) the spoken word, and (3) the written word. If the concept back of the spoken word be not clear and vivid, the object or its picture should be presented.

Writing. When the pupils have thus been taught the written word, they should next be taught to write it on their slates. It is not enough for a child to hear a spoken word; he must also speak it. It is, in like manner, not enough for a child to see a written word; he must also write it. The drawing or making of the form not only makes clear but fixes the "picture" of it in the mind. This involves the teaching of young pupils to write, and this will require skill on the part of the teacher. We forbear to make any suggestions.

Words Combined. As soon as two or more words that can be combined in a phrase or sentence have been taught, they should be thus combined, and the pupils taught to read the resulting phrase or sentence. The articles *a*, *an*, and *the* should be early taught and used in connection with names of things; as, a boy, a good boy, the sun, the bright sun, an ox, an old man, etc. The pupils should be trained from the first to speak these articles as if they were un-

accented syllables of the words with which they are connected. When is and are, and such action-words as run, fly, sing, etc., are taught, they should be used in making sentences. All these phrases and sentences should be read in a natural and easy manner, as much so as in talking.

Limit of Word Method.

The teaching of new written words as wholes, and then combining them in sentences, should be continued *until the child has learned the art of "taking in" a short sentence at a glance, and then reading it with ease and naturalness.* This is the foundation of the art of reading the printed page, and the sooner it is gained the better. Until this fundamental skill is acquired, there can be no true reading. This may require the teaching of one hundred or more common words, and the writing on the board of many scores of little sentences composed of them, and even paragraphs, and the "calling out" from the pupils of hundreds of oral sentences, thus making a beginning in the art of verbal expression or language.

Some teachers prefer to begin with the written sentence as a whole, then teaching the words of which it is composed, and this has been called the sentence method. It can doubtless be used successfully by a skillful teacher, but whatever advantage it may have, can be secured by the use of the *oral* sentence. When the pupils have been led to use the word in a sentence, it may then be written on the board, and, being written by itself, it will make a clearer impress on the mind than if written with other words. Nearly every new word taught should be used by the pupils,

often several times, in phrases and sentences, and this is easily secured. The reading lesson of the child should be eminently a talking lesson.

While the pupil is thus learning written words as wholes, and is reading with increasing skill sentences composed of them, the teacher should begin to make him familiar with the elementary sounds that make up spoken words. Up to this time, the child may not have been conscious of the fact that the words which he speaks so easily are made up of several sounds, much less that these can be separated by the voice, and thus be distinctly recognized.

Phonic Drills.

In these first phonic exercises, the teacher should appeal solely to the ear. *There should be no reference whatever to the written or printed words.* The object with which the pupil is dealing is a sound, and the eye can render no assistance.

The training may begin by drilling the pupils in the recognition of words *when slowly pronounced,* the sound elements being sufficiently separated to be easily recognized as parts, as *m-a-n, t-o-p,* etc., and soon by requiring the pupils to repeat the same. The separation may next be made so great as to produce the elements as distinct sounds. A few moments of lively drill each day will soon enable the youngest pupils to catch a spoken word in the "conscious ear," and separate it into its elements with great ease and accuracy; and also to combine sounds given by the teacher into the spoken word of which they may be the elements. The first of these processes is called the *phonic analysis* of words, and the second *phonic synthesis.*

The next step (to be deferred until the primer is reached) is to associate the phonic elements with the letters; *i. e.*, to teach the sounds which the several letters represent. This is readily done by selecting from the words already taught those which are purely phonetic, at first selecting those with short vowels, and arranging them in classes, those containing one or more common elements being grouped together; as, (1) mat, cat, sat, hat, bat, fat, an, fan, ran, can, cap, sad; (2) pen, men, hen, pet, met, set, bell, red; (3) in, pin, bin, tin, skin, it, bit, sit, hit, lip, pig; (4) ox, box, fox, top, cot, dog; (5) sun, run, gun, fun, up, cup, tub, mug, rub, nut, cut, etc.

Elementary Sounds.

Words containing the long vowels may next be taken, as lame, tame, mane, face, race, late, hate, etc., and then simple words containing the other vowels.

In an incredibly short time the elementary sounds will be so associated with the related letters that pupils will be able "to make out" and pronounce new written or printed words, and when this power is acquired, the teaching of words as wholes should give place to the *phonic method* of learning words. This will be easy when the new words contain no silent letters or letters with unusual sounds, and nearly one half of the words in an ordinary primer are purely phonetic. About one half of the remaining words present no special difficulty, even to a child, and this is true when neither phonic type, as Leigh's, nor diacritical marks are used. The indicating of the sounds of letters by modified type or marks may assist the pupil in pronouncing particular words, but experience does not conclusively show that

Phonic Method.

it gives the pupil increased power to read non-phonic type.*

There are two difficulties in the phonic analysis of words which are worthy of notice in this connection.

Difficulties.

One pertains to vowels which are modified by coalescing with the liquid or subvocal that follows, as in fast, chance, mercy, etc. There are very few teachers who can give the exact sound of the vowel in such cases, even in combination. The other difficulty pertains to obscure vowels in unaccented syllables, as in primer, creator, error, honor, lesson, etc. The vowel sound in such syllables (what there is of it) so blends with the liquid that it is very difficult to separate them and not change either sound. *Such syllables should not be analyzed by young pupils.*

This remark suggests the importance of giving early attention to the syllabic analysis of words so useful in making out and pronouncing new words. When a pupil recognizes the syllables of a word at a glance, there is little profit, the vocal drill excepted, in analyzing the word into its elements.† There is much time wasted in our schools in analyzing many times words and syllables that present no difficulty what-

* When the pupil is somewhat familiar with the phonic synthesis of new words, it will greatly assist him in associating certain sounds of letters in combination if words presenting these are written on the board in columns. A column of words with short *a*, and a parallel column of words with long *a*, a column with initial *c* hard, and a parallel column with initial *c* soft, etc., will be very helpful.

† This remark calls attention to the importance of paying careful attention to the syllables in oral or letter spelling. The modern practice of simply naming the letters of a word *in succession*, without reference to its division into syllables, is objectionable. The syllable is an important element.

ever. The phonic analysis of words should frequently give place to syllabic analysis.

It is sometimes claimed that the phonic method of teaching words makes poor spellers, since it begets a tendency to follow the phonic elements of the word in writing; and this claim seems to be sustained by the fact, noted by Dr. Thomas Hill and others, that deaf and dumb children, with equal practice, spell better in writing than speaking children. Their attention is given exclusively to the words as *forms*. Whatever may be true of the tendency referred to, it should be fully offset by the prior attention given to words as forms by the word method, and the constant reproduction of these forms in writing words—both supplemented by skillful drills in oral spelling. The phonic analysis should be succeeded by letter analysis, and the spelling of words as forms, both by writing and orally, should receive constant and persistent attention.

Spelling.

It has not been deemed best to state where the transition should be made from script to print, or when or how the charts may be used. These and other like details will depend more or less on circumstances, and can be wisely determined only by the teacher. It must suffice to say that if the blackboard and chart lessons be thoroughly taught, the pupils will thus master between one hundred and two hundred words, and will read hundreds of little sentences expressing interesting facts within their easy grasp. This done, they will be prepared to take the primer and read its beautiful pages with delight, provided always that

Script to Print.

Primer.

they are not permitted to stumble over words. The words in the primer should be taught with the same thoroughness as the new written words in previous lessons, but with increasing attention to the making out of the word from its elements.

Union Method.

It will be seen that the method of teaching reading above described unites what are known as the word, phonic, and letter methods, also objective, and in a limited sense phonetic, and hence it may properly be called the *Union method.* The manner in which these several processes or steps are united is shown in the following outline analysis:

First Steps in Reading.
- I. Words *as wholes*........
  1. Concept or idea represented—objective.
  2. Words as sounds.
  3. Words as forms—script or print.
  4. Writing words—script or print.
- II. Words in combination..
  1. Groups or phrases.
  2. Sentences.
  3. Paragraphs.
- III. Word analysis........
  1. Words as sounds—phonic.
  2. Words as forms—letter.

Reading Drills in Second Reader.

Most of the more recent manuals of methods seem to take it for granted that if reading be properly taught the first year, there will be little difficulty in the subsequent years of the course. It is true that a right beginning in this branch is specially important, but the experience of the schools shows that the teaching of reading after the first year also demands the highest teaching skill and endeavor. Indeed, all that precedes the use of the First Reader is but a prep-

aration for the mastery of the art of reading the printed page. It seems important, therefore, to sketch a method of teaching reading in First-reader, Second-reader, and Third-reader grades, and it is believed that such a method can be presented with sufficient clearness from the stand-point of the Second Reader.

Reading Defined.

Silent reading is the apprehension of the thoughts and feelings presented to the mind by written or printed language. Oral reading is the vocal expression of the thoughts and feelings presented to the mind by written or printed language. The necessary condition of both silent and oral reading is a clear apprehension of the thought and feeling as presented in the language read.

It follows from these statements that a pupil can not read a sentence correctly if he has not a clear knowledge of the words of which it is composed, such knowledge being essential to a grasp of the thought. This fact explains much of the poor success which so often attends the reading drills in our schools, and especially in elementary schools. The pupils are thrust at once into the reading of sentences, and these are taken up not singly, but in paragraphs. The attempt is made to master the words through the reading of the sentences, and the result is that the words are neither mastered nor the sentences read. The pupils go stumbling and drawling through the successive lessons without acquiring the ability to read accurately and intelligently either silently or orally. It is exceedingly painful to listen to reading when pupils thus hesitate and stumble over unfamiliar words.

The first step in a reading drill is the teaching of the words, and the more thoroughly this is done the more clearly will the pupils grasp and express the thought and feeling; and this statement suggests that a reading drill should consist of two corresponding exercises, the first designed to secure *a mastery of the words*, and the second *a correct reading of sentences*, the first being preparatory to the second. Let us consider these two exercises in the order stated.

Reading Drills.

The mastery of a word includes the ability (1) to recognize or name it at sight; (2) to utter it with accuracy, force, and ease; (3) to spell or analyze it by sound and by letter; and (4) to apprehend its meaning and to use it intelligently. The second result specified, and also the analysis by sound, are not essential to silent reading, and would receive no attention in teaching the deaf and dumb, but the pupils in our ordinary schools are to be taught to read orally, as well as silently, and hence all the results specified are important ends of a thorough word drill. When all the words in a sentence are thus mastered by a pupil, he is prepared to attempt to give oral expression to the thought. What we desire especially to urge is that this word drill should *precede* sentence reading.

Ends.

Among the various means which may be used to teach the words of a reading lesson, the following are the most valuable:

1. *The writing of all the* NEW *words in the lesson*, as a part of its preparation. This will greatly assist in the easy recognition of the words, and also in learning their spelling.

Means.

2. *The reading of the copied words from slate or paper in the class.* This may be done by orally spelling the words, and then by pronouncing them rapidly "up and down." This will secure accuracy in writing or copying, and fluency and ease in pronouncing. Words which are peculiar in orthography or difficult to pronounce may be written on the board and the pupils drilled upon them in concert and singly. This may be followed by the pronouncing of the words in the book from right to left, taking a line each, or the teacher may pronounce the first word at the right, a pupil the next word, the teacher the next, another pupil the next, and so on. Instead of pronouncing all the words, those containing two or more syllables may be given, the object being to test ability to name words *at sight.*

3. *The oral spelling of the words in the lesson by sound and by letter.* This will secure the study of the reading lesson, and will also enable the teacher to give due attention to the correct pronunciation and articulation of each word. We would urge every primary teacher to make this spelling exercise precede every exercise in reading. Special attention should be given to the proper division of words into syllables, and syllabic analysis should often be used in place of phonic analysis. Pupils should be frequently given lists of words to copy, dividing the same into syllables, marking the accent, and indicating the sounds of letters by the use of diacritical marks. Copies of such lists should be made on the blackboard and the pupils drilled thereon.

4. *The teaching of the meaning of new words* by objects, by illustrations, by use in phrases or senten-

ces, etc. The importance of this instruction has been so clearly and strongly set forth in preceding pages that nothing need be added here.

5. *The use of the words thus taught, in original sentences, both oral and written.* This exercise is widely used in our best schools. It is not only valuable as a test of the pupil's knowledge of the meaning of words, but it is an excellent language lesson. The sentences thus formed should be read by the pupil, and subsequently examined by the teacher.

The above exercises variously combined and modified to suit the condition and needs of pupils, will obviate largely all hesitation and stumbling in the calling of words, and, at the same time, will impart to them such a knowledge of their meaning as will greatly assist in the clear comprehension of the thought, without which good reading is impossible. They may receive attention in the first part of the reading exercise, or each alternate exercise may be devoted to them. The latter plan was adopted by one of the most successful teachers in my acquaintance, and with excellent results. She devoted the forenoon exercise entirely to the words, and the afternoon drill to the reading of sentences.

Reading Proper.

The words being mastered, the pupils are prepared to read the lesson—to grasp the thought and give it correct utterance. But the teacher must not take it for granted that no further instruction is necessary. The vocal expression must be made at once the evidence of a clear comprehension

of the thought and the test of it. To this end the mind must be interested, the attention enlisted, the feelings awakened, and all the involved powers of the soul put in an active state. This will require skillful work on the part of the teacher. Mere talking will not answer. It is possible to bury a reading lesson beneath a mass of miscellaneous and irrelevant talk. The one central aim is to give the pupil *needed* assistance in the grasp of the thought to be expressed. All instruction that does not throw light on the thought to be read, or prepare the pupil for its lively apprehension, is now out of place. *It is the pupils' time to talk.* The teacher's first duty is to ascertain what they know, and in this duty the voice is to be taken as the test of the mind. A mistake in emphasis is primarily the mind's blunder, and it must be corrected by giving the mind a clearer grasp of the thought. In this work there is a very small place for vocal imitation. The pupil may be able to imitate the teacher's utterance without grasping or appreciating the thought or feeling expressed.

Mental Pictures.

Special pains must be taken to assist the pupil in the reading of language that appeals to the imagination. The reader must see with the mind's eye the scenes which the language describes, and, to this end, the imagination must be active and responsive. Much of the dull reading in our schools is due to the fact that the pupils do not picture or appreciate what the language describes, and this is specially true in the reading of poetry.

The writer once visited a school and witnessed an exercise in reading that forcibly illustrates this point,

as well as the necessity of teaching concepts. The poem read began with the stanza:

> "I wish I were a reindeer,
> To gallop o'er the snow.
> Over the fleecy Lapland drear,
> So merrily I'd go."

The lines were read in a dull and unappreciative manner, and on questioning the pupils it was made evident that they had no idea of a reindeer or of Lapland, and no conception of the scene described. They had been repeating a jingle of words. A few words of instruction designed to give them clear concepts and a vivid mental picture of what the language describes, changed the mental condition of all, and a little drill secured good vocal expression.

The nature of the reading drill in the Second Reader, above described, will perhaps be more clearly shown by the following outline analysis:

- Reading Drill.
  - 1. Preparation—Word Mastery.
    - 1. Ends or results.
      - 1 Recognition of words at sight.
      - 2. Their correct and easy utterance.
      - 3. Their sound and form elements.
      - 4. Their meaning and use.
    - 2. Means..........
      - 1. Writing all new words.
      - 2. Reading copied words.
      - 3. Spelling by sound and letter.
      - 4. Teaching the meaning of words.
      - 5. Their use in original sentences.
  - II. Sentence Reading.................
    - 1 Grasp of thought and feeling.
    - 2. Vocal expression of thought and feeling.

It is not meant that all the reading exercises in an elementary school should be such drills as those just described. It is, however, urged that pupils should master one series of readers in this thorough manner. In addition, the classes should be supplied with supplemental readers, or other reading matter of like grade, and one or two exercises each week should be devoted to this supplemental reading.* Here the fullest freedom should be granted. The aim should be to test increasingly the ability of the pupils to read intelligently without previous drill, to interest them in the reading of good books, to create in them a thirst for knowlege, and to inspire them with a just appreciation of the beautiful and true in thought and word.

Supplemental Reading.

Reading Drills in Advanced Classes.

In more advanced classes, the word drill may be united with the reading exercise proper, and the study of the selection to be read may now take a wider range, including not only a more critical study of words and a more discriminating analysis of the thought, but also increasing attention to figures of speech, historical and literary allusions, style, etc. While the central aim of all this instruction is to lead the pupil to a clearer grasp of the thought and to a livelier feeling, as conditions of their proper vocal expression, it also aims to impart to him an increasing appreciation of good English, and greater power and facility in its interpretation and use.

* This supplemental reading may also be made the basis of an excellent series of language exercises.

As a further aid in this culture, each choice selection read should be made the basis of a practical and suggestive lesson in English literature. This instruction should not only include the biography of the author, but also information respecting his literary productions, with home readings, when practicable. No pupil should be permitted to read the selections from the choice literature found in the higher readers used in the schools, and remain ignorant of the writers who have made English letters illustrious.

English Literature.

There should be exercises to improve the voice—to increase its clearness, compass, resonance, force, etc., but there should be no attempt to fit tones and movements to passages by mechanical rules. All true vocal expression flows from the thought and feeling, just as the stream flows from the fountain. If the mind's action is sluggish, the utterance will be dull and monotonous; if the emotions are asleep, the tones will be lifeless. The one essential condition of true reading is a baptism into the spirit of the selection or passage. It should, however, be kept in mind that while good reading requires a clear expression of the thought, it does not require a *full* expression of the feeling. The reader should never "tear a passion to tatters," whatever the actor may do. Reading is not acting. The most that good reading requires is that the feeling be clearly suggested by the voice; and the power of the voice in this direction is marvellous.

Vocal Training.

Special attention should be given to the correct pronunciation of words. Words commonly mispro-

nounced should be written on the board in both orthographic and phonic forms, and the pupils drilled in their pronunciation. Lists of such words should be added to those found in the selections read; and it is an excellent plan for pupils to copy all such words in blank books, provided for the purpose, the words being written in one column in their orthographic form, and in another in the phonic form, the pronunciation being indicated by proper syllabication and diacritical marks. These lists of words, commonly mispronounced, should often be reviewed and their correct pronunciation made familiar. The reading drill should necessitate the daily use of the dictionary, and no intelligent pupil should complete the Fourth Reader without being able to determine the pronunciation and meaning of words from a standard dictionary—once a rare attainment in most grammar schools.

Pronunciation.

The nature of the reading drill above described may be more clearly indicated by an illustrative lesson, and I select for the purpose the opening paragraph of "*The Thunder Storm*," an excellent prose selection by George D. Prentice:

Illustrative Drill.

"I never was a man of feeble courage. There are few scenes of either human or elemental strife upon which I have not looked with a brow of daring. I have stood in the front of the battle when the swords were gleaming and circling around me like fiery serpents in the air. I have seen these things with a swelling soul, that knew not, that recked not, danger. But there is something in the thunder's voice that makes me tremble like a child."

The class is supposed to be composed of twenty pupils, numbered for convenience from one to twenty

inclusive, and the instruction and drill are indicated by questions and directions. The drill on the passage should be preceded by a preparatory study of the selection as a whole, with a biographical study of the author, as follows:

Preparatory Study.

Who was the writer of this selection? What do you know of his history? In what war did he serve as a cavalry officer? [The Mexican War.] What influential paper did he long edit? What kind of prose is this selection? Who can give the story on which it is based? No. 5 may do so. Did Mr. Prentice also write poetry? Name one or more of his poems. No. 7. Who can repeat a few lines from any one of his poems? What is a characteristic feature of Mr. Prentice's style? No. 2. What do you see to admire in this selection? etc.

Drill Proper.

We are now ready to read the passage. No. 3 may read the first sentence. Does the writer say that he was never a man? Never a man of courage? What does he assert? No. 4 may read the sentence. What is the emphatic group of words? No. 3. [of feeble courage.] What is the emphatic word in the group? You may now read the sentence again. The class may read in concert.

What kinds of scenes are referred to in the next sentence? No. 10. What is meant by "strife?" No. 11. Give an example. What kinds of strife are specified? No. 16. What is meant by "human" strife? No. 12. Give examples. What is meant by "elemental" strife? No. 20. Give examples. Name the four "elements" of the ancients. No. 15. What is the meaning of "scenes?" No. 19. What was its original meaning? How were these scenes looked

upon? [with a brow of daring.] What figure of speech is this? [Metaphor.] Would "without fear" express the idea as strongly? How does the "brow" express courage? [Here the teacher may teach and illustrate the effects of courage and fear on the expression of the face.] Which is the stronger word, "courage" or "daring?" No. 7 may read this sentence. No. 15. The class in concert. No. 1, the two sentences. No. 18.

No. 4 may read the next sentence. Where does Prentice say he has stood? Where in the battle? Why "in the front?" What is the meaning of "circling?" No. 6. Of "gleaming?" No. 2. What is the difference between "gleaming" and "flashing?" Which is the better word for this place? With what are the swords compared? No. 14. What is the figure of speech? [Simile.] The meaning of "fiery?" No. 13. What is the emphatic group of words in the simile? No. 9 may read the sentence. No. 17. What letter is silent in "swords?" No. 8. Write the word phonically on the board. The class may pronounce it. No. 11. No. 14. No. 16 may read the sentence; the three sentences. No. 13.

No. 17 may read the next sentence. What figure of speech is "with a swelling soul?" No. 2. [Metaphor.] Why does this phrase express courage? Express the same idea in simple language. No. 12. [without fear.] Which is the stronger expression? Which is the stronger word, "knew" or "recked?" No. 18. What is the meaning of recked? The original meaning? No. 19 may read the sentence. No. 20 may read to the first comma; the closing part of the sentence. What is the em-

phatic word in the closing part? No. 11. In the first part? Class may read the sentence.

What change of feeling is indicated by the closing sentence? No. 5. Read the sentence. What word is the hinge on which the vocal expression turns? Class. [But.] What is meant by the "thunder's voice?" No. 10. What figure of speech is this? [Personification.] Why is "voice" a better word here than peal or roar? Note the beauty of referring to the thunder as a *person.* What figure of speech is "like a child?" [Simile.] Why is the comparison a good one? No. 6 may read the closing sentence; the two closing sentences together. No. 1 may read the entire passage. No. 9 may read it.

These questions indicate very imperfectly the instruction and drill that may be based on this simple paragraph. It is seen that question and drill go hand in hand. The one picks the thought out of its verbal husk and kindles the feeling, and the other gives them proper utterance. It is evident that reading thus taught must enlarge the pupil's vocabulary, increase his command of language, train the voice, elevate the taste, sharpen the intellect, and refine and ennoble the feelings.

LANGUAGE.

The ability to express knowledge in correct, clear, and cogent language is one of the best results of school training. This fact has not only been recognized in these pages in many ways, but it has been accepted and applied as one of the prime tests of method and practice. It has been taught that every teaching exercise should enlarge the pupil's vocabulary, increase his power to express what he knows clearly and correctly, and enhance his appreciation of this power as worthy of his best efforts. It has been shown that both the lesson and the recitation should require fullness and clearness of expression, should correct errors and secure accuracy—in short, that they should be made a practical drill in the use of language, oral and written.

The fact has also been recognized that the schools must go further and provide, in addition, a separate and systematic course of training in language, with skill in its use as a distinct end. A quarter of a century ago it was necessary to advocate this duty and urge its importance upon teachers and school officers. Happily this necessity no longer exists, and it only remains to sketch for the guidance of the inexperienced those methods of teaching language that have stood the test of actual use. To this end, I have selected from the language exercises used in the best schools those that have impressed me most favorably, and have attempted to arrange and present these in a natural and progressive order. In determining this

order, it has been accepted as a guiding principle that, in teaching language as an art, synthesis should precede analysis, that the facts of language should precede its rules, and hence that practical composition should precede technical grammar.

The entire series of exercises, the purely mechanical excepted, embodies the principle that all fruitful training in language must begin with the thought and end with its expression (p. 129), and hence that the first step is to see that the pupil has knowledge to express. The exceptions are the exercises designed to give the child skill in those mechanical forms which are a part of written language, this mechanical phase of training being preparatory to expression proper.

The most practical and fruitful principle embodied in the series is expressed by the maxim: "*Talking before writing.*" The first language lesson given a little child in school, as well as in the nursery, should be one in talking, and all through the elementary course the tongue should prepare the way for the pen. The special weakness of much of the language instruction in the schools has its source in a violation of this guiding principle. Young pupils are expected to express on paper what they have not expressed orally, and often what they can not thus express. "Good habits of speech," says Professor March, "are caught rather than taught." Conversation should afford children needed opportunity to catch the art of talking, and especially should conversation be made the road to composition.

It follows that the written exercises in an elementary language course should be developed orally, and the knowledge acquired first expressed in clear and beauti-

ful speech—a fact that will appear in the lessons below. There should also be exercises in the upper grades specially designed to impart to pupils readiness, accuracy, and elegance in the oral expression of thought. The practice in a few schools of setting apart some twenty minutes each week for *the telling of the news* affords an excellent training in speaking. The pupils' aim should be not merely to give the information, but to tell it in the best possible manner. A similar training is afforded by the practice of reviewing studies by general topics (p. 182), the pupils being required to rise, face the class or school, and tell what they know in brief talks.

I. Primary Series—Preparatory.

1. *Writing words and sentences.* This is the first written step, and should be taken nearly, if not quite, as early as the first lesson in reading. The first words taught should not only be written by the teacher on the blackboard, but also by the pupils on their slates. In like manner, each new word should be introduced by crayon and pencil, and not only as a means of teaching reading (p. 224), but to impart early skill in writing. The first sentences written by the child should begin with a capital letter and end with the proper punctuation mark.*

2. *Copying maxims, proverbs, stanzas of poetry, etc.* The object of this step is to make the pupil familiar with

* In these and all subsequent exercises, careful attention is to be given to spelling, capitalization, punctuation, the forming of compound words, the division of words at the end of line, etc. Errors in the use of words should be persistently corrected.

the written form of language. The maxims and proverbs should be written on the blackboard, and then neatly copied by the pupil. The copying of a paragraph of the reading lesson each day will afford additional exercises. Stanzas and even short pieces of poetry may be selected for the purpose. A little encouragement from the teacher will cause children to take great pleasure in these copying exercises. Attention should be given to the proper use of capital letters and punctuation marks.

3. *Writing sentences dictated by the teacher and memorized by the pupil.* In the preceding exercises the pupil has had the written or printed model before him. Now that which is addressed to the *ear*, is to be placed in proper form before the *eye*. This is a step in advance, and it should be carefully taken. Each sentence must commence with a capital letter and end with the proper punctuation mark, the words must be correctly spelled, and the whole neatly arranged and written. Not only original sentences, but instructive maxims, verses of scripture, etc., may be given, the pupils being required to repeat the same in concert and singly until they can do so with accuracy and ease. It is well for children, even at this early age, to begin the task of enriching the mind with little gems of wisdom and beauty, so abundant in literature.

4. *Writing sentences expressing facts observed.* The pupil is now required to construct as well as copy sentences. The facts which he is led to observe are first expressed orally, and then written neatly and correctly on the slate. The starting-point is an object lesson, that is, a lesson in observing; the end is sen-

tence-making, and this is believed to be one of the highest uses of object lessons. They are the fountains out of which speech and composition flow. The pupil may first express each fact observed in a separate sentence; as, "The chalk is white," "The chalk is round," "The chalk is hard," "The chalk is brittle." He may next be taught to express these several facts in one sentence; as, "The chalk is white, round, hard, and brittle." These lessons may take a wide range, but they should always be brief and simple. The written exercise should not exceed four or five sentences, in one paragraph. The aim should be to interest the pupils in the object, and to make them very familiar with the facts observed and their oral expression before they attempt to write the same.

5. *Writing descriptions of present actions.* This is similar to the preceding, but calls into exercise not only the power of observation, but also of memory. The teacher may perform several acts, and then require the children to tell her what she did. If not well described, she may repeat the actions, and thus give the pupils another opportunity. The aim should be to secure close observation and accurate telling of what occurred. A pupil may be asked to step before the school, and by his actions give the pupils something to see and tell.

6. *Writing sentences containing one or more given words.* This step may embrace two classes of exercises. In the first the pupil is required to use properly, in sentences, words selected from his reading lessons. Suppose the words selected to be "fragrant," "fleece," and "tossed." The pupil writes, "New hay is very fragrant," "My lamb has a snowy fleece," "The boy

tossed the fish into the water." This is an excellent method of teaching the meaning of words. In the second class of exercises the teacher gives two or more words, and the pupil constructs a sentence containing them. Suppose the words given to be "skate," "ice," and "smooth." The pupil writes, "It is fine sport to skate on the smooth ice." The sentences should be first given orally, and then in writing. We have seen a primary school wrought up to the highest pitch of enthusiasm by this simple exercise. The teacher scarcely completed the writing of the last word before a forest of little hands indicated that the sentences were ready.

In more advanced classes, this exercise may be employed to familiarize pupils with the nature and use of prefixes and affixes. The following sentences selected from an actual exercise on the word "form" will illustrate: "I form a piece of clay into a tube," "Vanity deforms the mind," "I ought to reform myself every day," "The caterpillar transforms itself into a chrysalis, "I perform on the piano with my fingers," "I conform to the wishes of my parents," "I inform myself by observing nature."

7. *Writing stories which pupils have learned to tell well.* Stories are the delight of young children, and they like to hear them many times. It is a capital oral exercise to tell a simple story, and teach children to repeat it well. They will make many an effort to tell a story so as to please the teacher and receive her approval. When the pupils have learned a story and can tell it beautifully, let it be made a written exercise. It will be an excellent drill in spelling, and in the use of capitals and punctuation marks. The same

story may not only be repeated many times, but it may be written more than once.

N. B. In the above series of exercises both the thoughts and their oral expression are made familiar to the pupils before they are asked to write the sentences on the slate. The slate work is chiefly mechanical.

II. Secondary Series.

1. *Writing the substance of reading lessons.* The preceding exercises have led the pupil to the grouping of a few sentences, and writing them in the form of a paragraph. The pupil's reading lessons will afford excellent materials for additional practice. A few questions will elicit the more important facts, which, when expressed in the pupil's own language and properly grouped, will form an excellent written exercise. The lesson should first be taught orally, and the pupils should be given needed practice in telling what they thus learn. It will, however, not be necessary to make the written exercise a simple reproduction of the oral. The pupils are now prepared for freer work. One or two paragraphs may be sufficient for an exercise. This series may also include the changing of poetry to prose, the simplest poems being used at first—a capital exercise.

2. *Writing descriptions of pictures and stories based on pictures.* Children like to see and talk about pictures, and hence they afford excellent subjects for language lessons. They appeal not only to the eye but to the imagination—a constant source of child delight. I once heard a class of little children give a description

of a camel from a large picture of the animal, the facts being called out by the skillful questions of the teacher. Many years ago I called attention to a primary school in which "picture lessons" were a marked success, but now such schools are numerous. Pictures are a prominent feature in nearly all courses of language lessons, and they are even made the basis of several extended series of lessons presented on cards and in books for the use of pupils. Pictures may be made the basis of little stories, the pupil being encouraged to use the imagination freely. These stories may be suggested by questions.

3. *Writing stories told or read by the teacher.* This exercise is similar to the last in the primary series, but is more difficult since the stories are not committed to memory. The pupils hear the story and then give the substance of it in their own words. At first the teacher may review the narrative by questioning the pupils, thus fixing the main points of it in their minds. The charming stories of Grimm, Christian Andersen, and other writers of children's tales, may be used for this purpose. The teacher should usually tell the story, and, of course, in an interesting manner.

A story may be given in short sentences, and the pupils be required to unite and expand the same into a narrative.* It may also be suggested by questions

*The following analysis of a narrative by the late Prof. T. E. Suliot, a very skillful teacher of English composition, will illustrate this exercise:

1. During the reign of the Emperor Augustus, a dolphin formed an attachment to a boy.

2. The boy was the son of a poor man.

3. The boy used to feed the dolphin with bits of bread.

4. Every day the dolphin swam to the surface of the water.

written on the board. In higher classes, the mere outlines of a story may be given, and the pupils be required to write the same.

4. *Writing descriptions by answering questions.* So far the pupil has been more or less directly assisted in finding the thought-materials used in his written exercises. Now he is to begin to furnish his own materials, under the guidance of questions that direct his search for them. The plan is simple. The teacher selects an object or subject within the pupil's observation, as "Rain," "Snow," "Fences," etc., and writes on the blackboard several suggestive questions which the pupils are to answer the next day in writing. These answers are read in the class and freely discussed, thus giving to all the pupils an abundance of facts. They are now required to arrange these facts in the form of a written description. A given topic may be sufficient for several series of questions, and may afford materials for two or more written exercises. In the first exercises the objects may be presented with the questions. Pictures may also be used as the basis of this exercise.

5. *Writing business papers.* These may include promissory notes, due-bills, receipts, checks, drafts, etc.

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5. The dolphin was called by the boy.
6. The dolphin received his usual meal.
7. The dolphin carried the boy on his back from the sea-port to a school in Putioli.
8. The dolphin brought him back in the same manner.
9. The boy after a time grew sick.
10. The boy died.
11. The dolphin came to the usual place.
12. The dolphin missed his kind companion.
13. The dolphin is said to have died of grief.

Every boy and girl should be early taught to draw up such papers in proper form. They afford, in addition to their practical value, an excellent practice in writing abbreviated words, dates, etc.

III. Original Series.

The pupil is now thrown upon his own resources, and begins what may properly be called *original composition.* But it may be well to guide him in the selection of subjects. The one essential direction to all pupils is that they do not attempt to write on subjects *of which they know nothing*, the possession of thoughts being necessary to their expression. The seven series of exercises given below will afford much excellent practice.

1. *Letters.* Pupils in our schools should have much instruction and practice in letter-writing. The ability to write an intelligent, well-expressed, neatly-written letter at ten years of age, is a possible and important acquisition. I once had a pupil who, when a small boy in an English school, wrote a letter daily for two years. He greatly excelled all his classmates in command of language, and in accuracy and readiness in composing. A letter is a pen talk with a friend or other person, and is, perhaps, the freest and most natural of written productions. De Quincy thinks that the best style of writing is found in the private correspondence of educated women. Many a schoolgirl, whose "essays" are stilted and dreary enough, can write charming letters, and for the reason that her letters express her own thoughts and feelings. The dating, signing, folding, and addressing of letters

should receive special attention. The writing of letters should begin early—long before it is made a regular language exercise.

2. *Descriptions of known objects.* These may be natural, as an animal, a tree, a range of hills, a valley, a lake, etc., or objects made by human skill. The descriptions should be truthful.

3. *Narratives of personal experience.* These may at first be brief, including but a few incidents. A little practice, under stimulating guidance, will enable the pupil to write natural and interesting exercises.

4. *Descriptions of journeys, real and imaginary.* These may at first be written in the form of letters. Young pupils may first be asked to talk about the journey—a trip to the country, a visit to an uncle, etc., and then write a letter about it. This exercise may be made a valuable means of acquiring geographical knowledge.

5. *Biographical sketches.* This exercise may be united with the reading instruction, as described on page 240. When the facts in the life of an author have been made familiar, the pupils may be required to write these facts in the form of a biographical sketch. The exercise may also include the lives of men and women who have acquired fame in history, science, charity, etc., and especially those who have been public benefactors.

6. *Descriptions of current events.* These may be natural phenomena, as storms, floods, etc., or social and historical occurrences. New inventions, discoveries in science, etc., will be interesting topics to older pupils.

7. *The discussion of themes.* This brings the pupil to the writing of the essay proper, and here style as-

sumes new importance. Simplicity will require special attention. The best means of acquiring a simple style is the attentive reading of the writings of Addison and Irving. Franklin tells us in his autobiography that he greatly improved his style by carefully reading certain essays in the "Spectator," and then writing what he had read, comparing his style with the original, and correcting his errors. A good style is largely caught by hearing and reading good English, but it is made one's own by thoughtful practice.

It will be noticed that the three series of language exercises given above, and the several exercises in each series, are so arranged as to present a progressive course. The exercises rise in difficulty from the first to the last, ending with the writing of "essays"—a task which confronted the writer at his very first effort to "write the English language correctly."

It is not, however, meant that these exercises shall actually receive attention in school training in the order here indicated. It is possible to make language training so "systematic" as to destroy the pupil's interest in it. Too much attention to the letter may kill the spirit. There must be great variety, and even spontaneity, in a child's language efforts, and the best thing to be done at a given time, or in the future, can not always be anticipated. It is believed that the intelligent teacher will find in these series of exercises much of the best experience of the schools in language training. Special attention is called to the fact that none of them swing on the gate of technical grammar.

Language training should receive daily attention, and during the entire two years that precede the study of English grammar, language exercises should have a stated place in the *daily program.* They should receive as faithful attention, both by teacher and pupil, as the exercises in reading or arithmetic, or any other branch of study.

First Lessons in English Grammar.

A successful study of the science of language requires a subtlety of the judgment, and a maturity of the reason possessed by few pupils under fourteen years of age. Trench says that "Grammar is the logic of speech as Logic is the grammar of reason," and both philosophy and experience show that neither logic nor grammar is a child's study. Technical grammar clearly belongs to as high a period of mental training, as algebra. The most important reform in in the study of language, that has received attention within the past thirty years, is the postponement of grammar to a later period in the course; and, in most schools, it is still undertaken full two years too early. The time thus well-nigh wasted on the analytic study of language should be given to a more thorough and progressive training in the use of language, as is indicated in the previous pages. "As grammar was made after language," says Spencer, "so ought it to be taught after language."*

It is not only true that grammar should be taught

* It may without hesitation be affirmed that grammar is not the stepping-stone, but the finishing instrument.—*Marcel.*

after language, but its facts should be reached *through* language. The guiding maxims here are, "*Facts before principles,*" and "*Facts before their classification.*"

It is further to be observed that the facts of language are best reached by synthesis. The young pupil best learns the structure of the sentence, the nature and use of modifiers, by actually expressing and modifying his own thoughts. It is the thought that gives being and form to the sentence, and hence the thought must be grasped before the sentence can be analyzed, and the clearer this grasp the easier the analysis. Synthesis begins with the thought, and thus becomes the natural road to grammar. It should precede analysis, and both synthesis and analysis should prepare the way for technical grammar.

The following method of introducing the pupil to the study of English grammar embodies these principles. The exercises are limited to the *Simple Sentence*, since the mastery of its facts is essential to the intelligent study of the science of language as presented in the best school manuals.

Introductory Lessons.

Nouns.

Direct the pupils' attention to the distinction between objects and their names, and write the names of the various objects in the school-room on the blackboard as given by pupils. Teach the pupils that these names are called *nouns*. Require the names of twenty or more objects to be written on paper by each pupil and brought to the class at the next exercise.

As these lists of names are read, call attention to the fact that some of the names denote one object, and others more than one. Teach the idea of *number* as the property of nouns. Let the pupils reread their lists of nouns, and state whether they are singular or plural. Require them to bring to the next class exercise, say twenty nouns, written in the singular and also in the plural; as, tree, trees; bird, birds; fence, fences, etc.—the same being written in paragraph form, with proper punctuation marks. These written exercises will show that the plurals of nouns are not all formed in the same way, and possibly that certain nouns have the same form in the singular and in the plural.

Number.

The above exercises may also call attention to the fact that nouns which denote individual objects have no plural. Develop the idea of *class*, and show that the nouns which have a plural number denote classes of objects. Illustrate the distinction between a *common* noun, the name of a class, and a *proper* noun, the name of an individual. Require the pupils to bring to the next class exercise twenty common names, and after each a proper name denoting an individual of the class; thus, city, Columbus; river, Ohio; street, Broadway; island, Iceland, etc. This written exercise should be repeated, if necessary. Attention may be called to the fact that all proper nouns when written should begin with a capital letter.

Class.

Next develop the idea of *quality*, and write words denoting the quality of known objects on the blackboard. Teach that these words qualify the nouns,

which are the names of the objects, and are called *adjectives.** Require the pupils to bring in the names of twenty objects, each preceded by an adjective denoting quality; thus, tall trees; small apples; sour grapes; a pleasant face, etc.

Adjectives.

Call attention to the actions of familiar objects, and write on the blackboard words denoting action. Name an object, as bird or bee, and ask the pupils to name its appropriate actions. Teach that a word denoting action is called a *verb*, and require the pupils to bring in twenty or more written sentences composed of a noun and a verb; as, Birds fly. Children sing. Bees hum. etc.

Verbs.

Next call attention to the differences in actions of the same kind, and show that the meaning of a verb may be qualified by a word denoting manner, time, etc. Write verbs on the board and let pupils add qualifying words. Teach that these words that qualify verbs are called *adverbs*. Require the pupils to bring in twenty written sentences with each verb modified by an adverb.

Adverbs.

The pupils will thus obtain a clear primary knowledge of four parts of speech—nouns, the names of things; adjectives, words that modify the meaning of nouns; verbs, words that denote actions; and adverbs, words that modify verbs.† No attempt has been made to teach formal definitions, or to develop all the prop-

* The term *adnoun* is preferable, but the term adjective is in general use.

† Pronouns (personal) may also be introduced here, and the properties of gender and person made familiar. This instruction may, however, be given later with advantage.

erties of nouns and verbs, the classes of adjectives and adverbs, etc. Other facts and other classes of words will be discovered as the pupils proceed in the course, and can then be made familiar. The guiding maxim in these lessons is "*one fact at a time.*" This fact should be taught at the right time, and should be made familiar before it is left.

N. B. All of the written exercises in the course should be first brought in on slate or paper, and, after being considered in class and corrected, they should be neatly copied with pen and ink in a blank-book provided for the purpose. These exercises should be written in paragraph form and headed, *Exercise* 1, *Exercise* 2, etc.

Synthesis of the Simple Sentence.

The pupils are now prepared to begin the synthesis of the simple sentence, and thus learn the relations between the words of which it is composed. The first step is to teach the frame-work, so to speak, of the sentence by teaching the four general forms in which thoughts may be expressed, called the four forms of predication.

Action Predicated.

1. Write on the board several names of objects, and ask the pupils to affirm some action of each object. Proceed in this manner until ten or more sentences affirming action have been written. Call on the pupils to give the word in each sentence, that is, the name of the object and the word that denotes the action, and teach the terms *subject* and *predicate*. For the next lesson give the names of two objects, as birds and bees, and require the pupils to predicate as many actions of each as they may be able, each class of sentences to be written in a para-

graph. The pupils may also be required to select from ten to twenty objects, and affirm an action of each object.

These written sentences should be read in the class, and the subject and predicate in each designated. Select from the sentences thus presented and analyzed twenty or more of the best, and have the pupils copy the same with pen and ink in their exercise books, for future use.

2. Next show that quality may be affirmed of an object. Take an apple for example, and lead the pupils to recognize its various qualities—first those which the eye reveals; as, round, green or red, large or small, fair, etc.; then those revealed by the sense of touch; as, smooth or rough, hard, soft, or mellow, withered, etc.; then by the sense of taste; as, sour or sweet, tart, pleasant, juicy, etc. Let the pupils write sentences upon the blackboard affirming several of these qualities of an apple. Let them designate the words denoting respectively the name of the object or subject, the quality predicated or *attributed*, and the copula (terms to be explained).*

Quality Predicated.

For the next lesson several objects may be named, and the pupils required to bring in sentences predicating appropriate qualities of each. The words paper, chalk, coal, iron, sugar, salt, snow, ice, glass, leather, horse, tree, etc., will be found easy and suitable.

* The copula and attribute together constitute the predicate, and, in analysis, the pupils should be taught to divide the sentence into subject and predicate, and then give the copula and attribute. In the sentence, "Apples are sour," "Apples" is the subject, and "are sour" the predicate, "are" being the copula and "sour" the attribute. Some grammarians consider the attribute the predicate.

When these sentences have been read and analyzed, the teacher should select twenty or more of the best for the pupils to copy in their exercise books.

For an additional exercise, show how several qualities of the same object may be affirmed in one sentence; as, "Glass is hard, smooth, and brittle;" and also that the same quality may be affirmed of several objects; as, "Glass, paper, and ice are smooth." Have the pupils bring in ten or more sentences of each kind, and, after they have been read and analyzed, select ten or more of the best sentences of each kind for the pupils to copy in exercise books.

Class Predicated.

3. Review the previous lesson on classes of objects (p. 258), and then write on the board the names of ten or more objects, and ask the pupils to affirm class of each; as, "Grass is an herb," "Iron is a mineral," etc. Require the pupils to give the subject and predicate, and then the word denoting the class or the attribute and the copula. Require the pupils to bring in for the next class exercise twenty sentences, in which class is predicated. Analyze these sentences and select twenty of the best for pupils to copy. It may be necessary to have several exercises in order to make the pupils sufficiently familiar with this mode of predication.

Place, etc., Predicated.

4. Develop the ideas of place or position, and write on the board sentences in which place or position is affirmed; as, "The pencil is on the table," "The paper is under the book," etc. Show that the phrases "on the table" and "under the book" denote the *attribute* predicated, and analyze the sentences into subject and predicate, and the predicate

into copula and attribute. Write on the board the following words and phrases denoting place or position, and have pupils use the same in written sentences as attributes: here, there, in town, in the country, in the city, on the table, out of town, in the water, in the sky, etc. These sentences should be analyzed into subject and predicate, and the predicate into copula and attribute, and then twenty or more of the best selected and copied.

The idea of condition may then be developed in a similar manner, and sentences written containing such phrases in the predicate as in doubt, in perplexity, in danger, in peril, on the advance, on the retreat, on the increase, etc. These sentences should be analyzed and twenty or more selected and copied.*

Essential Elements.

The four classes of simple sentences thus taught present the four general forms of predication. If the exercises have been faithfully prepared, the sentences clearly analyzed, and the selected ones copied, the pupils will be somewhat fa-

* The practical value of a clear knowledge of this form of predication will appear more fully when the class reaches the parsing of the preposition. It will then be obvious, if attention be called to it, that when a prepositional phrase is used as an *essential element* of a sentence (not as a modifier), its initial preposition does not show the relation of its object to any other word in the sentence. The same is true when a phrase is used as the subject of a sentence. In such sentences as "The army is in peril," "The result is in doubt," "In danger is a phrase," "In the morning is the time for duty," etc., the phrase is an essential element, and the preposition "in" does not show the relation between words. When the prepositional phrase is used as a *modifier* (p. 264), the preposition shows the relation *between its object and the word which the phrase as a whole modifies.*

miliar with the essential elements of a simple sentence, and they will also have acquired some skill in its synthesis and analysis.

Modifiers of Subjects.

The next step will be to make the pupils familiar with the different modes of expanding a sentence by *the use of modifiers*, and the lessons may properly begin with the modifiers of the subject. It will be easy to show that the subject may be modified (1) by an *adjective; i. e.*, by a word denoting quality; as, "Tall trees bend," "Shallow brooks are noisy;" or by a limiting adjective; as, "This boy is studious," "Ten soldiers were killed;" or by both limiting and qualifying adjectives; as, "Five brave soldiers fell," "A few wild flowers are in the vase." These sentences will serve as models for sentences to be written by the pupils and analyzed in class, twenty or more of each series being selected and copied for future use.

In like manner it may be shown that the subject of a sentence may be modified (2) by a *noun denoting possession;* as, "Children's voices are musical," "The crazy man's eyes are restless," "The sun's warm rays are pleasant;" (3) by a *noun in apposition;* as, "Milton the poet was blind," "Willie the drummer is dead;" and (4) by an *adjunct* (or phrase); as, "The rays of the sun warm the earth," "The hand of diligence is seldom empty." Each of these forms of modifying will afford one or more written exercises of ten to twenty sentences each, to be analyzed, and the selected ones copied. It will be found a valuable exercise to require the pupils to change the prepositional phrases used by them to adjectives, or to nouns in the possessive case.

Great pains should be taken to secure the correct use of the possessive sign.

In a similar manner the use of participles and infinitives as modifiers of a noun may be illustrated and familiarized. It is better, however, to omit these modifiers until the verb is better understood.

The pupils may here be taught that these different modifiers of the subject are equally applicable to a noun in the predicate. The following sentences may be given as models for several new exercises: "A flatterer is a dangerous enemy," "An idle brain is the devil's workshop," "Idleness is the parent of vice."

Modifiers of the Verb.

The modifiers of the verb may next be taught. The verb may be modified (1) by an *adverb;* as, "The soldiers fought bravely" (manner), "A good name will shine forever" (time), "The king lives here" (place); and each of these sentences will serve as models for ten to twenty written sentences. Sentences may also be written and analyzed in which an adverb modifies an adverb; as, "Kate sang very sweetly," and those in which an adverb modifies an adjective; as, "A very tall tree fell," "The stranger is very rich."

The verb may be modified (2) by an *adjunct* (phrase) denoting manner, time, place, cause, etc.; as, "Bad workmen are known by their chips," "In the morning sow thy seed," "The soldier died for his country"—the adjuncts performing the same office as adverbs; and also by both an adverb and an adjunct; as, "The house was shaken violently by the wind."

The verb may be modified (3) by a noun denoting the *object*;* as, "The wind shakes the house," "The fire burns coal;" and also (4) by an *infinitive*, or infinitive phrase (verbal noun); as, "The boy strives to excel," "A noble boy will scorn to do a mean act." Each of these sentences will serve as models for ten to twenty written sentences, and the exercises should be repeated until this form of modifying is familiar to the pupils.

There has been little attempt in the above outline to indicate the nature of the oral instruction which should prepare the way for the writing of the illustrative exercises. The main reliance should be placed on the writing of the sentences and their analysis, since these will give the pupil a better knowledge of the structure of the sentence and the office of modifiers than any amount of explanation by the teacher.

Analysis and Parsing.

As indicated above in several instances, the analytic drill on the written exercises in class is to be followed by the selection of twenty (more or less) of the best sentences prepared by the pupils, and the copying of these in an exercise book provided for the purpose. These exercise books, at the close of the synthetic course, above described, will contain possibly near a *thousand selected sentences*, di-

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* Some grammarians do not regard the object as a modifier of the verb, but as an essential element of the sentence. It seems to be clearly a modifier.

The use of the participle, the infinitive (after nouns and adjectives), and the clause as a modifier should receive no attention until the verb is more fully taught, and the complex sentence is reached.

vided into exercises, and each specially illustrating one fact of the simple sentence. These books will thus contain most excellent material for future study, and the next step is to review the entire series, giving special attention to both *analysis* and *parsing*, the former being made the key to the latter. The analysis should be simple, and the parsing should follow no definite formula. The two essential facts of each word to be known are its *class* (part of speech) and its *relation* to the other words in the sentence. Other facts of importance may be called out by questions.

The properties of the noun and pronoun (personal) will be early reached, including person, number, gender, and case, and these should be made familiar; also the classes of adjectives and adverbs, and the preposition and conjunction. When the noun in the objective case after the verb is again reached, the pupils may be led to see that all verbs do not admit of an object, and also that verbs may be divided into two classes—those which take an object after them (transitive), and those which do not take an object (intransitive). It may be well at this point to require the pupils to rewrite the sentences in their books which contain an object after the verb, making the word denoting the object the subject. "The wind shakes the house" thus changed will become "The house is shaken by the wind." The pupils will thus discover that transitive verbs have two forms or voices called *active* and *passive*.

In teaching the verb it may be well to call attention to the *time* property, and especially the three natural divisions of time,—past, present, and future,—but it will be a mistake to attempt to teach at this time the modes and tenses of the verb exhaustively, including

the participles. Let these facts and forms remain for future discovery and study.

In these first lessons, designed to be *introductory* to the study of technical grammar, no attempt should be made to teach formal definitions and rules. The chief aim should be to give the pupils the concepts and facts of grammar as they are met in language. It will be time to attempt formal definitions of grammatical terms, when the study of the subject by means of a text-book is undertaken.

Study of Text-book.

It is not deemed necessary to add many suggestions respecting the teaching of English grammar when pupils are prepared for the study of a text-book. It must suffice to say that their attention should be directed to the mastery of the more important facts and principles, and to this end these should, one by one, be made familiar by continued drills. The ordinary text-books present too few sentences for analysis and parsing, and as many other sentences as may be needed should be added by the teacher. When the more essential facts and principles have thus been mastered,—and this may require a school year,—the subject as presented in the text-book should be reviewed. There should now be clean and thorough work.

In correcting errors in language, great care should be taken not to make the pupils too familiar with the errors corrected. They should both speak and write the correct forms, not the incorrect. The habit of correct speech is largely "caught" by speaking correctly, and hence an error in speech should not be repeated by the pupil.

GEOGRAPHY.

Progress Made.

The teaching of geography has received for many years past increasingly wide and earnest attention, and this has resulted in progress in several directions. More attention is given to oral instruction and map drawing than formerly, less time is wasted on unimportant details and in memorizing the descriptive text, and an increasing number of teachers are making the facts and principles of physical geography the basis of their instruction in the higher classes. The discouraging fact is that not one of these important changes has as yet been made in the majority of American schools. It is believed that many, if not most, teachers are still "going through" the text-books in geography in the old way.

Method and Text-book.

One reason for this state of things is the impression among teachers that the adoption of more rational methods of teaching geography depends on the use of text-books embodying these methods. It is true that a suitable text-book is a valuable aid in teaching any branch of study, especially in its higher phases, but no intelligent teacher need follow a wrong method of teaching because it is embodied in the book used by his pupils, and this is especially true in teaching geography. Quite satisfactory success has been attained in this branch in connection with the use of the least progressive text-books. Experience fully shows that a rational method of teaching geography is less dependent on a

suitable text-book than a poor method. The more bookish and memoriter the method, the more essential is a good text-book.

It may also be noted that there is no other branch of study in which the method of teaching to be used depends less on the objects or purposes to be attained. Whether the purpose be the discipline of the mind, or the culture of the imagination, or obtaining a basis for the intelligent study of history, or for reading to obtain information of current events, or for the purposes of commerce and travel, the best results are reached by essentially the same general method of instruction. What is most needed for each and all of these ends is the furnishing of the mind with definite pictures of different portions of the earth's surface—mental maps which will give a "local habitation" to terrestrial affairs. These mental maps must be something more than form and color, representing outline and relief, though a good "eye picture" is important. They must also picture the globe as man's dwelling-place, and, to this end, they must represent the important facts related to human life—to man's interests and achievements.

Objects or Ends.

The wise adaptation of the matter and method of instruction in geography to the varying capability of the pupils (page 100) gives three somewhat distinct courses of study, as follows:

Courses of Study.

1. An oral course in home geography, based on the study of things.

2. An intermediate course, with the use of globes, outline maps, and text-books.

3. A course in physical geography.

The characteristic features of these several courses of instruction, with more or less attention to method, will now be considered.

I. Oral Course in Home Geography.

First Steps.

The first lessons in geography should teach those primary concepts and facts which are the elements of all geographical knowledge, and since these simple elements of knowledge can only be acquired by the study of things (page 113), the instruction must be objective and oral. Geography is the one elementary branch that looks out to nature, and its study must begin with the observation of nature, first as bounded by the horizon line that shuts in the child's little world of home—nature as presented to the eye; and then as it may be pictured by the imagination.

Primary Knowledge.

The primary concepts and facts of geography thus to be taught include those of position, direction, distance, surface, map representation, land and water, soil, climate, natural productions (including trees and plants, fruits, grains and grasses, garden vegetables, animals, domestic and wild, etc.), the occupations of men, races of men, etc. The attempt to embody this primary knowledge in a book for pupils to study has always failed and must fail. Such lessons must be taught orally, and in giving them the teacher must be careful to tell the pupils nothing which they can be led to observe for themselves.

It is not, however, meant that all the instruction should be limited to objects which lie within the

observation of the pupils. Many of the facts taught objectively should be made stepping-stones to kindred facts lying beyond the horizon of the senses. The pupils may thus be led from the seen to the unseen, from the known to the related unknown. Instruction thus relating to other portions of the earth should be given in such a manner as not only to interest the pupils, but to lead them to picture mentally the objects described, and hence it should be addressed to the imagination in a lively manner.

In view of the difficulties experienced by teachers in arranging this primary instruction in geography, I present below the syllabus of a course, developing somewhat in detail both the matter and method of instruction. It will be seen that the course contains many of the topics once taught under the name of "object lessons," including lessons on plants, animals, minerals, etc.,—all clearly belonging to primary geography. The grouping of these topics under the general subject of geography will assist in removing the growing impression that too many branches are taught in elementary schools. The instruction indicated should run through the first three or four years of school.

Syllabus.

Syllabus of Oral Lessons in Home Geography.

Teach objectively the relative positions expressed by the terms *over* and *under*, *above* and *below*, *in*, *on* or *upon*, etc. This may be done by placing objects in these relations to each other and asking questions. The pupils may also be requested to hold a book over a slate, under a slate; to put a book on the table, in the drawer, etc.

Position or Place.

Next teach the terms *right, left, front, back*. Pupils hold up the right hand; the left hand. They step two steps to the right; two steps to the left. They change positions and point to the right; to the left. One pupil stands in front of the teacher; another, back of the teacher. Pupils name objects in the school-room at their right, left, front, and back. The teacher names objects and the pupils locate them.

Pupils are requested to stand in front of the class and name objects located by the teacher; then to locate objects named by the teacher. A pupil faces the table and points to its front edge, back edge, right-hand edge, left-hand edge, etc. He takes a different position and names or locates the front, the back, etc. The exercises are to be varied and continued until the pupils have clear ideas of these relative positions.

Direction.

Teach the directions *east* and *west* by referring to the rising sun and to the setting sun. Have pupils face the east, face the west; point to the east, point to the west; walk toward the east, walk toward the west, etc.

Pupils stand with their right hands toward the east and their left hands toward the west, and are told that their faces are to the *north* and their backs to the *south*. They point north and then south. They walk north and then south. They face the north, the south, the east, the west. They face successively north, east, south, and west, and tell in each instance the direction of their right hand, left hand, face, back.

Pupils point to the north side of the school-room, south side, east end, west end. One pupil takes a position near the north wall of the school-room (No. 1), another near the east wall (No. 2), a third near the south wall (No. 3), and a fourth (No. 4) near the west wall. No. 1 points to No. 3 and gives the direction, and No. 3 to No. 1. No. 2 points to No. 4 and gives direction, and No. 4 to No. 2. No. 1 walks south, No. 3 north, No. 2 west, No. 4 east, etc.

Pupils tell in what part of the room the front door is, the teacher's desk, the clock, stove, etc. They give the directions of the cracks in the floor, the backs of seats, sides and ends of the room, etc. They name some object north of the school-house; east, west, south. Pupils tell in what direction they walk in coming to school, in going home, etc.

Teach the pupils that the direction between north and east is *north-east.* What direction between north and west? South and east? South and west? Pupils face the north-west; south-west, north-east; south-east. They name an object in the north-west corner of the room, in the south-west corner, north-east corner; south-east corner.

A pupil takes his place in front of the class and walks three steps toward the north-west, three steps south-west Class give the direction from the teacher to different objects in the room; from the school-house to the churches, hotels, dwellings, hills, woods, ponds, etc., in the vicinity; direction of these objects, taken two and two, to each other.

Two pupils take a long string, and, standing in different positions in the school-room, give the direction each to the other. They tell in what direction a fly would walk from one end of the string to the other. *In* what direction does a north wind blow? *From* what direction? An east wind? A south wind?

If the direction between objects in above exercises can not be accurately described, let the class say "nearly;" as, "nearly north-east." Whenever the observations of the pupils are at fault, give them an opportunity to look again. Postpone the answer to another day, if necessary.

Idea of Distance.

Compare objects of nearly equal length, and let pupils guess which is the longer. Draw a straight line upon the blackboard and let the pupils divide it into two equal parts; four equal parts; three equal parts. Test accuracy by measurement. Supply each pupil with a six-inch rule.* Hold up pencils, pen-holders, etc., for pupils to guess the length; apply the rule to test results.

Teach the terms *length*, *width* or *breadth*, *depth*, *thickness*, and *height.* Pupils guess the length and width of books, slates, window-panes, desks, etc. Pupils draw lines upon blackboard three inches long, four inches, nine inches, etc., and apply the rule to ascertain the exact length.

Show the pupils a foot-rule and a yard-stick. Draw a line one foot in length upon the blackboard; let a pupil determine

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* A narrow strip of strong paper accurately divided into inches will answer.

how many inches there are in it by actual measurement. Pupils guess and then measure the length of lines; the length and width of the blackboard; of the floor; of the window frames; the height of the ceiling.

They estimate the width of the street in yards, the length of the school-yard, the distance between trees, etc., testing the accuracy in each case by measuring. Two pupils stand in various positions, guess the distance between them, and then measure with the yard-stick. They guess the distance between objects placed for the purpose.

A line at least one rod in length is provided. The pupils guess distances (at first under five rods, then under ten, next under twenty, and so on), and then measure them.

Select a well known object one mile from the school-house; compare the distance to prominent objects in the vicinity with the distance to this. Give the pupils as correct an idea as possible of a *mile*—the geographical unit. Let them estimate the distance they come to school; the distance from the school-house to well known objects, as the post-office, a hill, etc.

Combine direction and distance, and thus review previous lessons. Let the pupils give direction and distance between objects in the school-room; the direction and distance to prominent objects in the neighborhood; estimate the number of minutes it will take to walk to each, etc.

Map of Table-top.

Place a table in such a position that its edges shall coincide with the points of the compass, and, if there be no blackboard on the north wall of the school-room, fasten on it a large piece of paper. Have pupils stand facing the north. Draw on the board or paper near the top a horizontal line one half, or one third, or one fourth of the length of the north edge or side of the table, and tell the pupils that this line represents the table's edge, and that you wish them to help you complete a picture of the top of the table. Next start a line from the east end of the line on the board and perpendicular to it, and have pupils measure the edges of the table to determine how long it must be drawn; then draw it. Next draw a line representing the west edge of the table, and then a line representing the south edge. Call this a *map* of the top of the table. Teach the pupils that the upper edge of

the blackboard is the north edge, the bottom edge the south, the right-hand edge the east, and the left-hand edge the west. Have pupils point to the north edge of the map; the east edge; the south edge; the west edge; the north-east corner; the south-east corner; the south-west corner; the north-west corner.

Next place on the table at different points objects, as an ink-stand, bell, box, apple, etc., and then locate these objects on the map, pupils assisting in determining the positions. Outline pictures of objects may be drawn, or they may be represented by initial letters or figures. Let pupils give directions between the objects on the table and then between their representatives on the map. Continue the drill until pupils are nearly as familiar with direction on the map as on the table-top. Have the pupils draw a map of the table-top on their slates, and locate objects on the table on their map.

Map of School-room.

The next step will be to draw a map of the *floor* of the school-room, on a definite scale, as one inch to the foot. Measure the north end or side of the school-room, and draw a horizontal line to represent this edge of the floor. Have pupils measure the other sides of the room and complete its outline. Then locate accurately the doors, stoves, teacher's desk, etc.

Let the pupils locate these objects, first in the school-room and then on the map—"first the object and then the picture." Let them give the directions between the objects, taken two and two, and then between their representatives on the map—thus passing from the real objects to the map. Teach what is meant by the boundaries of the room; of a farm. Have the pupils copy this map on their slates.

Other maps.

Next draw a map of the school-yard or the square in which the school-house is situated, determining comparative length of sides by measurement. Locate a few objects and drill in direction, passing from the real objects to their representatives on the map. To familiarize the pupils with direction on a map, place a figure at the center of the map, and at the middle of each side and each end, and then ask the direction from 1 to 2, 2 to 1; 1 to 4, 4 to 1; 2 to 3, 3 to 2, etc.

Draw on a definite scale a map of the township, village, or city in which the school is located, representing thereon the principal streets, streams, hills, buildings, etc., and then drill pupils on this map as above. Continue until they can readily give directions between objects, locate them by words, and can readily draw the map.

Surface. Develop the idea of *surface*, showing that surface may be smooth or rough, even or uneven. Take a large sheet of paper and place it on the floor or table, and call it an even surface; then crumple the paper, thus making the surface uneven. Have pupils point out an even surface of ground near the school-house; also an uneven surface. Talk about the near farms, whether even or uneven, and describe the difference in the roads in an even and an uneven country.

Level or Sloping. Next develop the idea of a level surface and a sloping or inclined surface. Point to the top of the table and ask whether level or sloping; tip the table by lifting one end of it, and then ask whether the top be level or sloping. Have pupils hold their slates in a level position; in a sloping position. Show that water runs readily off from a sloping surface; the effect on running water if the slope be increased.

Plane Surfaces. Next develop the idea of a plane. Take a straight edge, as a yard-stick, and put it in different positions on the top of the table, and let the pupils see how the edge rests uniformly on the table. Put a sheet of paper smoothly on the table and apply the straight edge again; then crumple up the paper and apply the edge, calling the attention of the pupils to the great difference. Tell them that the top of the table is a *plane* surface, and ask whether the floor is a plane surface, the walls of the room, the ceiling, etc. Then show that a plane may be level or sloping; ask what kind of a plane is the top of the table; tip the table, and ask what kind of a plane it now is. Show that level land-surfaces are called *plains* (not planes). Ask pupils to find a small plain near the school-house. Lead the pupils to see by imagination larger plains,—plains that contain a number of farms, etc.

Next develop the concept of a hill, and make a picture of one on the blackboard. Teach the ideas represented by the words foot or base, sides or slopes, top or summit, and the height of

the hill. The last idea can best be taught by molding a hill in sand, and, after teaching its parts, running a needle or wire from the top vertically to the plane of the base. Show that the height is less than the length of the slope. Teach distinction between a hill and a mound—the one a natural elevation of land; the other artificial. Help the pupils to imagine a very high hill, and call it a mountain; describe as vividly as possible some noted mountain.

Hill and Mountain.

Next call attention to a ridge or range of hills. If there be one in the neighborhood, use this; if not, show the pupils a picture of such a range, or mold ranges of hills in sand, and then develop an idea of a valley.

Ridges of Hills.

The next lesson may develop the idea of a stream of water, beginning with a stream well known to the pupils. Teach what is meant by running water and by still water; what is meant by the current of a stream; why the water has a current; why some streams are more rapid than others; why boats can not ascend some rivers; what is meant by a water-fall. Tell the pupils about famous rapids in rivers; also something of interest about some famous falls, as Niagara Falls.

Stream of Water.

Draw the picture or map of a stream of water on the board, and teach what is meant by the source or sources of the stream, its course, and its mouth; also, the banks of the stream, the right bank, the left bank; its channel and its bed; its branches, etc. Write all these terms on the board; also the names applied to a small stream, as *creek* and *brook;* then develop the idea of a river, and apply appropriate terms above to it.

N. B.—*Teach no formal definitions at this stage*, but see that concepts and ideas are clearly in mind, and that the proper words are closely associated with them.

Develop the concept *lake*, beginning with a known pond, if pupils have not seen a lake. Compare a pond and a stream—one running water, and the other still water. Show how ponds are formed; what are its banks, its bed, its depth. Enlarge the pond in imagination until it is a lake large enough for steamers to sail on it. Describe some great lake, its waves in storms, etc.; describe a salt lake.

Lake.

Draw map of township or county on the board in outline, and, with the assistance of the pupils, indicate the location of ranges of hills, if any, streams, ponds or lakes, the village, etc.; and then by questions lead the pupils to locate the more interesting of these objects and talk about them. In this simple manner, the pupils may acquire some knowledge of the surface of the country where they live, and its representation by means of a map—the beginning of geographical knowledge.

Map of County.

Have the pupils name the different kinds of trees that grow in the vicinity, and write the names of forest trees on the board; ask pupils to bring in specimens of their leaves; teach them to recognize the more common trees by their leaves and bark. Teach the uses of the trees named; the difference between a shrub (a dwarf tree) and a sapling (young tree); the diameter and height of the largest trees seen by the pupils; distance to the limbs, etc. Tell the pupils about the mammoth trees of California.

Trees.

Take a small shrub and show it to the pupils. Lead them to see its several parts, as roots, stalk or trunk, branches, and leaves; write the names on the board. Teach how trees grow from seeds or slips; what their food is, and how received—the "mouths" of the tree; what is taken through the roots; what through the leaves and green sprouts; how to tell the age of a tree; what becomes of wood when burned; how charcoal is made, and what use is made of it; what use is made of ashes, etc.

Next develop the concept forest or woods. Begin with a known grove, with its cool shade in summer; then speak of the great woods or forests, covering a wide extent of country; of the wild animals that live in some great forests; of the Indians, once the children of the woods. Describe a pine forest in winter, especially when covered with snow; also, a Brazilian forest.

Let the pupils see and handle, if possible, the different kinds of earth, as sand, clay, loam, etc., and teach them what is meant by a sandy soil, a clay soil, a loam soil; also, a fertile soil, a barren soil, etc. Have the pupils locate these different soils, if found in the neighborhood. Write

Soils.

on the blackboard the names of the more common grasses with which the pupils may be familiar.

Next teach the different grains raised by the farmers in the locality, and write the names, as given by the pupils, on the blackboard; also, the uses of each grain opposite its name. Write also the names of the grains raised in other sections, which pupils have seen. Tell them about the great wheat-fields of the North-west; the corn-fields of Illinois; the rice-fields of China and India.

Grains.

Next take up the garden vegetables, and write on the board the names of the more common, as given by pupils; also, names of vegetables raised in other countries, and seen by the pupils. Give a lesson on the pea-nut or ground-nut. Teach the use made of the beet in France (manufacture of sugar), and give lessons on sugars—maple, beet, cane, and sorghum.

Vegetables.

Several lessons may be given on fruits. Write on the board the names of the fruits raised in the vicinity, as given by the pupils. Have them tell how they grow, how cultivated, for what used, etc. Next write on the board the names of fruits raised elsewhere and imported. Give lessons on oranges, describing an orange grove or orchard in Florida or California; also lessons on lemons, bananas, figs, etc., using specimens of the fruits. Give lessons on wild fruits; on fruit cultivation, grafting, etc.; also lessons on coffee, tea, and chocolate.

Fruits.

Give several lessons on the foods of the people in different countries, as China, Greenland, Central Africa,—foods in cold countries and in hot countries. Speak of the importance of the potato in Ireland ("potato famine"); rice in India and China; the date-palm in the Sahara desert, etc.

Foods.

Next take up the plants that produce material for clothing—flax, where raised, how dressed, etc.; cotton, where raised, how picked, etc.; hemp, for what used. Give also a lesson on the silk-worm, its food, etc.

Plants for Clothing.

The animals found in the vicinity should next receive attention. Write on the board the names of the domestic animals,

first quadrupeds, as given by pupils, and have them designate those that are cud-chewers, those that have a cloven hoof, those that eat flesh, those that are commonly used for food by man; what meat is called *beef*, what *mutton*, what *pork*, etc. Have pupils describe the teeth and feet of the cat and of the dog. Give lessons on the making of butter and cheese; on the horse, the sheep, the hog, the goat, the camel, the reindeer, the elephant, etc.

Domestic Animals.

Teach the wild animals of the vicinity,—those that live in the woods, those that burrow in the ground, those that infest barns and houses, those that are hunted for their fur, those that are hunted for food, etc. Give lessons on the squirrel, the opossum, the porcupine, the deer, the bear, the buffalo, the tiger, the lion, etc., using pictures of the animals not known to the pupils.

Wild Animals.

Write on the board the names of the domestic birds (fowls) raised in the vicinity, as given by pupils. Have the pupils tell the use or value of each to man; those that are web-footed, those that perch at night, etc. Give lessons on eggs, the hatching of the young, etc. Next let pupils name the wild birds, and designate those that are birds of prey, those that are swimmers, etc. Give lessons on the owl, the hawk, the pigeon, the ostrich, the condor, etc.

Birds.

Give lessons on reptiles, including those found in the vicinity and those found in other countries, as the alligator, the crocodile, the boa-constrictor, etc.; also, lessons on insects, including the fly, the spider, the grasshopper, the locust, the honey-bee, etc.; also, lessons on fishes and other water animals.

Other Animals.

Give lessons on the occupations of the people of the locality. Write on the board the names of occupations, the names given to persons engaged in them, the materials and tools used, what is produced or made, etc. These lessons may be made very interesting and profitable. Next give lessons on the kinds of houses in which people live, the clothing they wear, the food they eat, etc.,—including people in different parts of the world.

Occupations.

Next give lessons on the races of men—white race, black, red (copper-colored), yellow, and brown. Write on the board the names of the five races, and opposite each the names of peoples belonging to it as given by the pupils, including Indian, Negro, German, Irish, French, etc.

Races of Men.

Give lessons on the globe, teaching the earth's form, motion on its axis (causing day and night), and the general distribution of land and water,—the great oceans, continents, and islands; next give lessons on the paths of the sun and moon in the heavens, rising in the east and setting in the west. Teach the horizon, horizontal line, and horizontal plane; the zenith and vertical line, using a string with a little weight attached as a "plumb-line." Have pupils tell what kinds of lines are the edges of the floor and ceiling, the corner edges of the walls, etc.; what kinds of planes are the floor, ceiling, walls of the room, etc. Review direction in reference to the cardinal and semi-cardinal points.

Globe.

Give lessons on the sun and moon—rise in the east and set in the west, as the earth rotates from west to east; the path of the sun from east to west; when it rises north of east and sets north of west; when it rises south of east and sets south of west; when it is nearest the zenith and when farthest from the zenith at noon; why it is warmer at noon than in the morning; why it is warmer in summer than in winter. Give also lessons on the shadows of objects—at what hour of the day objects cast the shortest shadow; at what season of the year shadows of objects observed by the pupils are shortest at noon; at what season longest at noon, etc.

The Sun.

Give lessons on day and night—the light called day and the darkness night. Days long in summer and short in winter; nights the reverse; winter and summer evenings; when day and night are equal. What constitutes a *natural* day; when the day begins—Babylonians began the day at sunrise; the Jews, at sunset; our day (civil) begins and ends at midnight; number of hours in a day.

Idea of Time.

Develop the idea of an hour; also of a minute. Number of hours school is in session each half day; how often the clock strikes; length of recess; how many recesses would make an hour? Let the school be silent just *one minute;* let pupils guess how many minutes since the class was called out; since the time of silence; how long it takes pupils to walk home, etc. Teach the number of hours in a day; minutes in an hour.

Clocks. Give lessons on the use of clocks and watches; explain the movements of the hour hand and minute hand; how to tell the time by them; sun-dials used before clocks—how made; noon-marks, useless on a cloudy day; King Alfred's method of measuring hours by notched candles; the hour-glass, etc.

Teach the number and names of the days of the week—Sunday the first day, Monday the second, etc.; number of weeks in a month; since the school-term commenced; before it closes; from New Year's to New Year's, a year; from one birth-day to another a year; number of months in a year; number of weeks; number of days. Time table may be written on the board and repeated.

Seasons. Give lesson on the four seasons. Spring—vegetation *springs* from the ground; nature clothes herself with leaves and flowers; days grow longer and nights shorter; the sun at noon is more nearly overhead; names of the spring months, etc.

Summer—the *sun* season; the sun nearly overhead at noon; long days and short nights; haying and harvesting; grain formerly cut with a sickle,—now with a cradle or a reaper; grass cut with a scythe,—also with a mower; names of the summer months, etc.

Autumn, also called *fall,*—leaves, fruit, etc., *fall* to the ground; the days grow shorter and the nights longer; position of the sun at noon; the farmer gathers his corn, potatoes, apples, etc.; squirrels gather nuts for winter's use; frost comes; change in color of leaves; beautiful foliage of trees, etc.

Winter—the *wind* season; short days and long nights; sun not as near overhead at noon as in summer; snow keeps the earth warm; falls very deep in Canada; sometimes buries cattle, sheep, etc.; fences covered; houses almost covered;

sleigh-riding on the snow; snow houses of the Esquimaux; no snow in many countries; a great many people never saw ice.

Lastly, teach the geography of the State. If not supplied with a good map of the State, draw one in outline on the board. Estimate the number of days it would take to walk across the State in different directions; locate on map the mountains or ranges of hills, the valleys, plains, etc.; the rivers and lakes, if any; the principal cities, railroads, canals. Give lessons on the natural productions, animal, vegetable, and mineral; the occupations of the people; the colleges, public institutions, etc., etc.

The State.

II. The Intermediate or Text-Book Course.

The first pages of nearly all geographical text-books are devoted to definitions, and these should be carefully taught—the definitions of mathematical terms at first omitted. If the prior oral course has been well taught, the pupils will be quite familiar with many of these terms. When this is not the case, the concepts involved should be carefully taught. The following illustrations will show the method to be pursued.

Teaching Definitions.

In teaching the definition of a mountain, begin with a known hill and review all the terms applied to it, as foot or base, slopes or sides, top or summit, height, etc. Draw a profile view of it on board, and have the pupils point out the parts. Lead the pupils to the definition, "*A hill is a natural elevation of land.*"

Mountains.

Next show a picture of a very high hill, and describe a walk to the top of it; have pupils point out its base, summit, east side, west side, and south side; compare the slopes, etc.; and then lead them to form

an image or mental picture of a very high mountain. Call attention to a village nearly ten miles away, and ask pupils to imagine the village and the surrounding country lifted up until the village is above the clouds, and the school-house at the foot of a very high mountain—a day's walk up to the village; mountain two miles high. Have them imagine the village removed and the top covered with snow (a white cap); no trees or shrubs around the top; lower down skirted with stunted trees and bushes; still lower with thick forests; near the base with farms, extending up the sides. Speak of the view from the summit, clouds beneath skirting the mountain sides, lightning in clouds below, no rain on top, etc. The pupils may thus realize the meaning of the definition, "*A mountain is a high elevation of land.*"

Mountain Chain.

An image or picture of a mountain chain or range may in like manner be occasioned in the pupil's mind, the imagination passing from the known range or ridge of hills to immense mountain chains or ranges, as the Rocky Mountains or the Andes. Describe a journey over the Andes on the backs of mules, the journey taking two or three weeks; the passing of railroads over the Alleghany Mountains and the Rocky Mountains—through passes or gaps. Lead pupils to define *mountain chain*, *table-land*, *gap*, or *pass*.

Volcano.

Show a picture of a volcano—ashes and melted earth and stones (lava) thrown out from the inside. Describe the mouth of the volcano, or crater; an eruption, with lava flowing down the sides—cities sometimes buried. Give a

vivid description of some great eruption; describe an active volcano; an extinct volcano. Lead pupils to define *volcano*, *lava*, *crater*.

Plain. Starting with the little plains and dales which the pupils have seen, lead them to a true conception of a large plain and valley; all plains not level; a gradually rolling country a plain. Speak of the prairies; give an idea of the great valleys in this country; of the great treeless plains of the West; of the Sahara,—a plain without grass, shrubs, or trees, except in spots called oases. Pupils thus led to define a *plain*, *valley*, *plateau*, *prairie*, *desert*.

River. To teach the definition of a river, begin with the stream of water known to the pupils, and review what has been taught of its source, course, mouth, banks, channel, bed, branches, rapids, falls, etc., and then lead the pupils to form as vivid an image as possible of a large river by imagining the stream as wide as from the school-house to some object a mile distant; so deep that the water would flow over the top of a tree if it stood in the middle of it; and so swift that no boy in school could keep up with a floating log. Talk about steamboats, the head of navigation, freshets, etc.; describe the Amazon, the Mississippi, the St. Lawrence; lead pupils to define a *spring*, a *brook* or *creek*, a *river*.

Illustrations. All the land forms above defined may be illustrated by the use of the molding-board, and by the same means pupils may be assisted in forming a concept of an island, peninsula, isthmus, cape, promontory, etc.; also of a bay, strait, etc.; but good pictures of the objects, such as are now found

in most manuals, represent them much better than crude sand forms, and this is specially true of the divisions of water. A heavy rain will furnish miniature islands, peninsulas, isthmuses, capes, bays, straits, etc., and for teaching purposes these *real objects* are much superior to any representations that can be made either on paper or in sand. It is a mistake for teachers to use the signs of things when the real things are within easy reach. The pupils' knowledge of the objects taught and defined should now be tested by recitations.

Mathematical Terms. The mathematical lines used on maps, the zones, and the general distribution of the land and water masses should be taught by means of a good globe. No attempt should be made, at this stage, to teach mathematical definitions, but pupils can easily be taught to name and locate the parallel lines, the meridian lines, the equator, the tropics, the polar circles, and the poles, and they can also be taught the seasons of the several zones, and many interesting facts of climate, productions, etc. The final review of this text-book course will be sufficiently early to teach the formal definitions of mathematical terms; and a full explanation of the change of seasons may be deferred until the study of physical geography is reached.

Lessons on Globe. Several lessons should be given on the globe with the view of giving the pupils a correct image of the earth's surface, and general ideas of its form, motions, etc. These lessons should all be reviewed by the use of a good outline map of the world, which, for class instruction, is much superior

to an ordinary globe, the latter being too small for this purpose.

No attempt in these preparatory lessons should be made to teach details, but the aim should be to give the pupils a clear outline picture of the earth's surface, and a general knowledge of its continents, oceans, climate belts, etc. These oral lessons on the map may be made intensely interesting by references to the typical animals, productions, and peoples of the different zones.

A few lessons may be now assigned on the map of the world, and the pupil's knowledge tested by searching recitations. The essential thing is the placing of an outline map *before the class when reciting*, the chief purpose being to form a distinct image of the earth's surface in the pupil's mind.

Oral Lessons on Map.

The pupils are now prepared to begin the study of the several grand divisions or continents, beginning with North America. The teacher should place a good outline map before the class, and, with a pointer and by questions, he should direct the pupils in a study of the form of the continent, its irregular coast-line, the contrasts between the eastern coast-line and the western, the surrounding oceans, the indenting gulfs and bays, the adjacent islands, the great mountain systems, the river slopes and river systems, the great plains and valleys, the great lakes, the climate-belts, the characteristic products of each, the political divisions, etc. The aim of these preparatory oral lessons should be to interest the pupils in the study of North America, and to give them true conceptions of it as a real continent, and not simply as a map.

Map Study. The first assigned lesson on the map should be the drawing of the continent in outline, and the learning of the names of the oceans, seas, and the larger gulfs and bays. The pupils should be taught to draw the map by some approved method. It will be found a good plan to write on the board in their order (beginning say at the north-east part of the map) the objects to be represented and learned, thus:

Oceans and Seas.	*Gulfs and Bays.*
Atlantic Ocean,	Hudson Bay,
Caribbean Sea,	Gulf of St. Lawrence,
Pacific Ocean,	Bay of Fundy,
Behring Sea,	Chesapeake Bay,
Arctic Ocean.	Gulf of Mexico,
	Gulf of California.

Recitation. The first work of the pupils in the recitation should be the drawing of the map in outline on the board; and, this being done, they should severally name and point to the oceans and seas in their proper order, and also the gulfs and bays. This should be done rapidly by the successive pupils, without any prompting and without the asking of questions by the teacher. The next test should be the asking of *descriptive* questions; as, "What ocean east of North America?" "What bay in the north-eastern part of the continent?" "Of what ocean is it a part?" The teacher may next give the names and require the pupils to locate the objects with a pointer and *in words*. All the map exercises should be interspersed with interesting information "thrown in" by the teacher or "called out" from the pupils.

The Bay of Fundy should thus be associated with its high tides, the Gulf of Mexico with the Gulf Stream, etc. The map exercises may thus be made to glow with interest.

The next lesson may be devoted to the land projections seen in the coast-line of the continent. The names of the peninsulas and a few of the more prominent capes may be written on the board, memorized, and recited as above described. The next lesson may be the adding of the adjacent islands to the outline map as drawn by the pupils, the names of the islands to be written on the board in order, and then memorized and recited, as above. Every island and group of islands thus studied should be associated with interesting information respecting it. The teacher should be enthusiastic in his efforts to awaken in his pupils a desire to know more of these ocean-girt lands. The maps must be made to speak, not simply to the eye, but to the mind.

The succeeding lessons may be devoted to the mountains, plateaus, and lower plains; the rivers (in systems) and the lakes; the climate-belts and their typical products; the political divisions and their capitals; the chief cities, etc. The names of the objects included in the successive lessons should be written on the board in order, the objects drawn by pupils in their outline map, the map reproduced on the board, and the lesson recited as above.

Map Drawing.

It may be well to require the pupils at each recitation to re-draw the entire map as left at the last lesson, and then add or insert the objects that constitute the new lesson, the aim being to give the pupils sufficient practice to enable them to

draw at last the complete map accurately and with dispatch.* No attempt should be made to secure finely finished maps. They should be off-hand drawings, distinct in outline and filling, with few details. The drawing of the maps determines the order in which the continent is studied and also the order in which the topics are recited. The description of the continent not only progresses as the drawing of the map progresses, but the pupils tell "what they see in the map," instead of repeating the text. When the map is completed, the pupils are in possession of a large amount of information respecting North America, and the map represents something more than "lines and dots."

Review Lessons.

The next step is to review the continent, using a good outline wall-map. This is essential to the best results. The maps drawn by the pupils have fixed the separate features in the mind, but the map, as a whole, is more or less inaccurate. The review with an accurate outline map before the eyes of the pupils will give them a more accurate image of the continent, and this accurate *mental picture* is the important result to be attained. In the review, the pupils should locate with a pointer and name the successive objects in their order rapidly. They should then locate with a pointer and also in words.

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* The value of sand-molding as a means of teaching the structure or relief of continents and countries is questioned. The sand forms give not only imperfect but erroneous ideas of land elevations as compared with horizontal distances. Relief maps also give wrong impressions, but are less objectionable than sand reliefs.

In the final review, there should be *no map before the class when reciting.* This review may consist of two series of exercises: viz., (1) the teacher may ask descriptive questions and the pupils answer by giving the names of the objects described, then adding the description; and (2) the teacher may name objects and the pupils give a descriptive answer.

When the map has been thoroughly reviewed in this manner, the map questions in the text-book may be used for final review. The questions which relate to objects not included in the previous map lessons may be omitted by beginning classes. Their mastery will, however, give the pupils but little trouble.

Study of Descriptive Text.

When the map has thus been thoroughly mastered (*the essential step*), the pupils may next study the descriptive text.* Most of the facts here concisely stated are familiar to the pupils; but, in assigning the lessons, it will be well for the teacher to "work up" anew the description, making free use of pointer and outline maps. Many interesting facts have already been given in connection with the map lessons. These and other facts can now be so grouped as to give the pupils a vivid mental image of the continent as represented by the map. At this early stage, lively oral teaching should prepare the pupils for the intelligent study of the text, and to this end oral lessons and recitations may alternate (page 157).

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* It may be claimed that the thorough map study here commended gives too much prominence to topography, but it is not a dead and meaningless topography that is taught. The map is not taught as an end but as a means.

Recitations.

The descriptive text may be recited first by questions and then reviewed by topics. I have always preferred special topics, or topics specially adapted to the continent or country studied. This involves more labor on the teacher's part, but it obviates the unprofitable forcing of the descriptions of all countries into the same form.

The lengths of rivers, the heights of mountains, the areas of countries, the latitude and longitude of islands, cities, etc., are best taught by comparison, the pupils fixing in memory the numerical representatives of a few objects, and then learning to estimate others by the eye. Needed accuracy may thus be secured, and sufficiently accurate comparisons may often be made in "the mind's eye." A pupil who has a definite mental picture of the earth's surface, and has fixed in memory the latitude of a few well-chosen cities, is able to give the latitude of other known cities with very great accuracy without referring to the map. It is a waste of time to attempt to memorize the latitude and longitude of numerous cities, islands, etc. The populations of cities are also best fixed in memory by comparison, a few cities being selected as bases.

It seems unnecessary to add that *the pupils should neither be required nor permitted to commit the descriptive text to memory.* The recitation should be so conducted as to require the pupils to state what they have learned in their own language—a few definitions excepted. They should not only give the more important facts stated in the text, but also facts taught orally or acquired by reading. Special pains should be taken to secure accuracy and facility in speech.

III. Course in Physical Geography.

The eighth school year ought to find pupils sufficiently familiar with ordinary maps, and with sufficient geographical knowledge, to enter successfully on the study of physical geography. It seems a mistake to continue the study of the facts and phenomena of the separate continents and oceans after the pupil is prepared to study them in their relations to each other and to the globe as a physical organism. Physical geography gives the facts of common geography a new meaning, and no study is better adapted to stimulate inquiry and thought. The reading of such books as Guyot's "Earth and Man," and Ritter's "Comparative Geography," would give an intelligent pupil a life-long interest in the structure and phenomena of the globe. The time usually devoted to ordinary geography in the higher grades of elementary schools should be shortened, and one or two years given to an inspiring and broadening study of geography as a science.

ARITHMETIC.

The teaching of arithmetic passes through three somewhat distinct phases or courses, the first covering a period of two to three years, the second about three years, and the third two to three years. These courses may be called:

1. The Primary Course.
2. The Elementary Course [Book].
3. The Completing Course.

The most that will be attempted in these pages is to sketch the characteristic features of the methods employed in these several phases or courses of instruction.

I. THE PRIMARY COURSE.

The first step in teaching a number is to develop an idea of the number itself, and this can only be done by objects. A number is neither a word nor a figure, and hence it can not be taught by teaching its name or the figure or figures that express it. A child may learn the names of the numbers not only from one to ten, but from one to one hundred, and not have, as a result, a clear idea of a single number named. Experience shows that clear ideas of the primary numbers are slowly acquired, and that they need to be carefully taught.

The aim of the first series of lessons in number is to teach objectively the numbers from *one to ten inclusive*—

First Lessons. the primary or digital numbers. The initial exercises in teaching these numbers include

numbering, combining, separating, and taking away groups of objects, first in sight and then not in sight, but easily imagined. The teaching of each successive number may include the following steps:

1. The numbering of the objects in any group from one to ten inclusive, *without counting*.

2. The combining of any two groups whose sum does not exceed ten, *without counting;* and (2) the separating of the group thus formed into the two groups that compose it.

3. The separating of any group not exceeding ten into the two smaller groups that compose it, and then taking successively each of the two smaller groups thus found from the original group.

4. The combining, separating, and taking away of groups of objects in sight, and then not in sight, but easily imagined,—no group exceeding ten.

5. The comparing of two groups of objects, in sight and not in sight, to see how many objects in one group more or less than in the other.

6. The applying of the processes learned to the solution of easy problems involving a simple exercise of the imagination and judgment.

The exercises in numbering are intended to develop the power to recognize at sight, *without counting*, the number of objects in any group not exceeding ten—a power essential to the easy mastery of the other exercises. It is claimed by primary teachers of wide experience that the majority of children, when they first enter school, can not give *at sight* the number of objects in a group exceeding three. A few weeks of drill will, however, enable them to number instantly any group not exceeding ten. This may be done by

an unconscious separation of the larger groups into two smaller groups, and the combining of these; but, howsoever done, the act is practically instantaneous. This perceptive power is not only fundamental in combining and separating groups of objects, but it is also of great value in practical life.

Special attention is called to the importance of avoiding in these objective exercises the too common practice of *counting by ones*. The numbering, combining, and separating of groups of objects by counting leads to the pernicious habit of adding and subtracting numbers by counting, a habit that must be overcome before a pupil can learn to add or subtract numbers as wholes. When a child can number a group of three objects at sight, he should be taught a group of four objects, as three and one, or one more than three, and not simply as four objects. It is not only unnecessary to number four objects by counting one, two, three, four, but this counting is likely to give the child the erroneous idea that the first object is one, the second two, the third three, the fourth four. The child must see the entire group as four objects, and when he has learned that four objects are also three objects and one object, or two objects and two objects, he has a clear idea of the number four. The easy and quick perception of the sum of any two groups of objects, present or imagined, sum not exceeding ten, is the first step in the art of adding and subtracting numbers.

The combining, separating, and subtracting of groups of objects not in sight may be introduced as soon as the pupils have acquired the power to combine, separate, and subtract groups of objects in sight. The true

order is first the combining, separating, and subtracting of groups of objects in sight; and, second, the combining, separating, and subtracting of groups of objects not in sight, and the second step may, after a few lessons, immediately follow the first.

Abstract Numbers.

The purely objective and concrete exercises, described above, may, in due time, be followed by:

7. The adding, separating, and subtracting of the corresponding abstract numbers.

8. The making of the figures one by one that express the successive digital numbers taught.

9. Board and slate exercises corresponding to the oral exercises; and also exercises in adding numbers expressed by figures written in columns, sums not exceeding ten.

These drills with abstract numbers may properly be introduced early in the year, but so strong is the tendency of teachers to use abstract numbers to the neglect of needed objective and concrete exercises, that it may be wise to recommend that abstract numbers be entirely excluded from the first year's course. If this be done, there is no danger that their use will be omitted or neglected in the succeeding years.

This tendency of teachers to use abstract numbers in primary lessons in arithmetic, is largely due to the fact that it is easier to drill pupils on words and other symbols than it is to teach them real knowledge,—a fact sadly illustrated in the memoriter, word, and figure drills which have so long characterized school instruction.

It may be a question whether children should be taught the figures, and the use of them in slate exer-

cises, in connection with these first-step lessons. This doubtless depends on the age of the children taught. If children are admitted to school as early as five years of age, the teaching of figures may be wisely deferred until the second year, or, at least, until the latter part of the first year. When pupils enter school at the age of six years and upward, the figures may be taught after a few days, at the close of the different series of lessons, and slate and board exercises may be used as early as the number five or six is reached.

The skill acquired in making figures the first year will promote the progress of the pupils the second year, and the danger that the use of the figures will lead pupils into the error of confounding figures with the numbers which they represent,—an error common among pupils who, from the first, use figures as actual numbers—can easily be avoided. The teacher should take pains to make a clear distinction between numbers and their signs—a distinction as obvious as that between an idea and its word—and, what is even more important, he should not in speech treat figures and numbers as identical. It is wholly unnecessary, for example, to direct pupils to add the figures 6 and 7. It is not only more accurate, but as easy, to say the numbers six and seven, or, more briefly, six and seven.

Abuse of Objects.

There is a kindred error in confounding numbers and objects—the group of objects that represents a number to the eye, being considered the number itself. The teacher says, "Show me the number three," and the pupil holds up three fingers. Now, it is clearly not the group of fingers that is the number three, but the *threeness* of the fingers—the *how many* in the group. This suggests the possi-

bility of keeping pupils numbering, combining, and separating groups of objects *in sight* so long that it may be difficult to *unsense* their conception of number —to secure the easy apprehension of number without reference to sensible objects. Pupils should soon pass from groups of objects in sight to those not in sight, and early, but not too early, to the abstract numbers.*

Second Series.

The aims of the second series of lessons in number are (1) to teach the numbers from eleven to twenty inclusive, and their representation by figures; and (2) to teach the adding, subtracting, and analyzing of numbers, the amounts and minuends, and the numbers analyzed, not exceeding twenty.

The steps or drills to attain the second aim are as follows:

1. The adding of any two digital numbers without counting, and the subtracting of each from their sum.

2. The separating of each number, not exceeding twenty, into any two digital numbers that compose

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*The statement has been made that a child can not think an abstract number. If the word "think" is used in the sense of *image*, the statement is obviously true, for all images or sense-concepts are necessarily particular and concrete. But if the word think be used in the sense of *apprehend*, the statement is misleading. No one really knows a number until he apprehends it abstractly; that is, until he apprehends the abstract number. When a child can think seven as more than three without imaging seven and three particular objects, he apprehends both seven and three as abstract numbers.

"Nothing is a surer sign of high intellectual capacity than the power of quickly seeing and easily manipulating ideas of a very abstract nature."—*Francis Galton.*

it, and the subtracting of each number thus found from the original number.

3. The adding of two or more equal numbers, amounts not exceeding twenty; and the separating of any number, not exceeding twenty, into all the equal numbers that compose it.

4. The applying of the processes learned to the solution of practical problems, involving a simple exercise of the imagination and judgment.

5. Blackboard and slate exercises in addition and subtraction, amounts and minuends not exceeding twenty.

The power to perceive the sum of any two digital numbers without counting, and the difference between either of two digital numbers and their sum, is the basis of the art of accurate and rapid computation. If this power be acquired the first two years of school, the time devoted to the teaching of number has been wisely employed.

Part and Factor Processes.

The teacher should keep in mind, when taking the third step above, that the adding of equal numbers, as four 3's, is not multiplication, and that the separating of a number into the equal numbers that compose it, is not numerical division. The word "times," and the factor signs, × and ÷, should not be used in connection with these exercises. They are exercises in addition and subtraction, part processes, and only the part signs, + and —, should be used.

It is believed that nothing is gained by combining the processes of multiplication and division with those of addition and subtraction in the foregoing exercises. There is no such immediate connection between these

two sets of processes as requires the teaching of them together. The concepts and processes of addition and subtraction relate to numbers as composed of *parts*, and, being inverse processes, should be taught together. The concepts and processes of multiplication and division relate to numbers as composed of *factors*, and, being inverse processes, should likewise be taught together. But there is nothing in the relation of these two sets of inverse processes *to each other* that necessitates or justifies the teaching of them from the first as correlates. On the contrary, there are strong reasons against the mixing up of these two sets of relations in the child's first lessons in number.

When the concepts and processes of addition and subtraction are familiar to pupils, those of multiplication and division are easily acquired. A knowledge of the former assists in acquiring the latter. Addition, for example, assists the pupil in determining the product of two digits, and the more familiar the pupil is with addition, the more easily will he learn multiplication. On the contrary, multiplication can render a child little, if any, assistance in learning the sum of two digits. In the order of acquisition, the processes of multiplication and division naturally follow those of addition and subtraction, and there is nothing gained by alternating these two sets of inverse processes in the *first* lessons in number. It is better to observe the important maxim, "First the simple, and then the complex."

The primary and fundamental processes in number are *addition* and *subtraction*, and the natural way to teach a child to add and subtract numbers is to give him exercises *involving these processes.* Exercises in

multiplying and dividing numbers can render no assistance in these first lessons; and, if they could, such assistance is not needed, since the processes of addition and subtraction are easily taught without it.

The aims of the third series of lessons in the primary course are (1) to teach the product of any two digital numbers, and (2) to teach the division of this product by each of its two factors.

Third Series.

The steps or drills to attain these aims are:

1. The finding of the number corresponding to the product of any two digital numbers, by adding one of the numbers to itself continuously as many times as there are units in the other given number, *less one*, or (2), better, by adding one of the numbers to its product by a number *one less* than the other number.

2. The associating of the product of any two digital numbers with these numbers, so that this product may be discerned instantly, *without adding*, when the two given numbers are presented to the mind as factors.

3. The teaching of the division of any product by each of its two digital factors as the *inverse* of the process of their multiplication.

4. Slate and board exercises in multiplication and division.

It will be noticed that the finding of the number which corresponds to the product of any two digital numbers (first step), is not multiplication proper, but a *preparatory* process. This number may also be found by subtraction. The number corresponding to the product of 4 times 5 may, for example, be found by adding four 5's, or by adding 5 to 15 (three 5's), or by taking 5 from 25 (five 5's).

In teaching the multiplication of the digital numbers, the teacher should aim to associate these numbers, two and two, with their products so directly that the mind passes from factors to product by one instantaneous act. The mind should pass from 4×5 to 20 as directly and immediately as it passes from $4 + 5$ to 9. There should be no adding in the first act and no counting by ones in the second.

The association of the digital numbers, two and two, with their products, makes possible a distinct numerical process, called *multiplication*, and its inverse process, called *division*. The existence of these distinct processes is shown by the fact that they are uniformly expressed by terms that are never applied to addition and subtraction. No mathematical terms are more distinct than the terms *add* and *multiply*, *sum* and *product*; *subtract* and *divide*, *difference* and *quotient*. Moreover, the part signs, $+$ and $-$, and the factor signs, $\times$ and $\div$, run through mathematics from elementary arithmetic to the calculus, and they never indicate the same process; $a \times b$ never means $a + b$, and $a \div b$ never means $a - b$.

Use of Text-book.

The three series of lessons above described constitute the primary course in number; and, for full and detailed methods of teaching these lessons, the reader is referred to the author's "*Oral Lessons in Number.*" It must suffice to add that when the first two series of lessons are completed, the pupils will be prepared to use an elementary arithmetic with advantage. The putting of a suitable arithmetic into the hands of pupils as early as the third year will not only increase their interest and otherwise promote their progress in number, but it will greatly relieve the

teacher of unnecessary labor—not an unimportant consideration.

II. The Elementary Course [Book].

The aim of this course is to teach all elementary processes with both integral and fractional numbers, and also those applications which are most frequently used in business and common life, including United States money, common measures (not metric), mensuration, percentage (elements), and simple interest. The integral numbers used are larger than those in the primary course, and the fundamental processes are more clearly differentiated, the processes of addition, subtraction, multiplication, and division being treated separately, this being specially true of the dissimilar written processes.

Use of Objects.

During the first year of this course there will be little occasion for the use of objects, all the primary concepts and processes used having been taught in the prior course. It is a waste of time to keep pupils of this grade dealing with the sensible representatives of numbers when they are familiar with the numbers themselves. The use of objects is a means, not an end. A simple numerical process may be made difficult to a child by an elaborate objective illustration, and, besides, a pupil who can easily understand such illustrations, when presented in a book, *does not need them.* The complex illustrations of the decimal notation, both of integers and fractions, found in some elementary arithmetics, is an example of this misuse, if not abuse, of the objective method. The pupil who has been properly taught the expres-

sion of numbers from 1 to 100 and then to 1000, has the key to the decimal notation, and all that he needs to master the system is a well-graded series of exercises for practice.

All new concepts and all initial steps in new processes should be taught objectively, or, when the presence of objects is not necessary, with concrete numbers. The common money units in United States money, and the more common measures which are the basis of denominate numbers and mensuration, should be taught *objectively*, and many of these units of measure should be taught in the primary course, and always by presenting and using the actual measures. No pupil should memorize tables of denominate numbers before he has clear concepts of the measures back of them. The memorizing of the table is the end and not the beginning of such training.

Oral and Written Exercises.

All of the new written processes in elementary arithmetic should be introduced by inductive oral exercises, usually with concrete numbers, the transition from the clearly apprehended oral process to the written being easy and natural. An important condition of success in teaching elementary arithmetic is *the skillful union of oral or mental processes and written processes.* The essential thing is the wise selection and grading of the inductive examples, and the training of the pupils in their oral solution until the mental process is clear and familiar. The transition to the written process is then easy. All that is necessary, in most cases, is to draw out from the pupils by questions and put on the blackboard the written solutions of two or three of the oral examples in connection with the oral solutions. But

this step should not be taken *until the inductive exercises have all been recited orally.* The pupils should first master the oral processes, and then be led to pass from these to the written processes.

All the written problems assigned for a lesson, should be solved by the pupils on slate or paper, *and the solutions should be brought to the recitation for the teacher's inspection and approval.* The solutions should be made in an approved form, though uniformity is not necessary, and they should be arranged in a neat and systematic manner. A little instruction will enable pupils to make an economic use of space in slate and blackboard work, and, at the same time, present each solution in an intelligible form. When the solutions of problems are properly arranged and written, two to three minutes will suffice to inspect the slate work of a large class.

Oral Analysis.

In the oral exercises in number given in the primary course, there should be no attempt to teach the logical analysis of the little problems, and generally nothing is gained by requiring a formal statement of the reasons for processes and results. The oral solutions in the elementary course should also be concise and simple. Young pupils are not helped by an attempt to give a minute and formal statement of every condition involved in a problem; and, at no stage of their advancement, is the reasoning faculty trained by the repetition of what has been aptly called "logical verbiage." It is now admitted that the elaborate logical analyses of problems which pupils were formerly required to give in what is called "mental arithmetic," was a serious hindrance to the mastery of the processes and principles of arithmetic,

and it is equally evident that it was an injury to the thinking power of children. Much of the glibbest logical analysis, once the pride of so many teachers, was the result of the worst form of rote teaching, the analyses being committed to memory by the pupils, and repeated without any wholesome exercise of the logical faculty.

This wide abuse of the so-called "mental arithmetic" has led many teachers to underestimate the value of analytic drills in teaching arithmetic; and, as a consequence, they have a small place, if any, in their instruction. The clear logical analysis of problems has a very important place in arithmetical instruction, and hence the so-called mental problems should be numerous and their right solution should be taught with as much thoroughness as the written problems, especial care being always taken to adapt the form of analysis to the capacity and advancement of the pupils.

Rules.

The old method of teaching arithmetical processes by requiring pupils, first, to commit to memory a formal rule, and then to solve the problems "according to the rule," and with constant reference to it, was long since discarded by the most successful teachers. Experience has shown that the rule is not only useless as a means of teaching numerical processes, but that it is an actual hindrance. It has also shown that a knowledge of the process is essential to the proper teaching of the rule. Hence, "*processes before rules*," and "*rules through processes*," have been generally accepted as wise maxims for the teaching of elementary arithmetic. In teaching any process, attention should be called to the successive steps, and the pupils required to describe these steps in

words, but all this should be done with direct reference to the mastery of the process as such.

When the formal rule is taught, it should be derived from the process by the pupils, under the guidance of the teacher. The true order of the successive steps is as follows:

1. A mastery of the process without reference to the author's rule.

2. The recognition and statement of the successive steps of the process in their order.

3. The combination of these several statements into a general statement.

4. A comparison of the general statement thus formed with the author's rule.

5. The memorizing of the approved rule.

The definitions should, in like manner, be taught inductively, and they should first be stated by the pupils under the teacher's guidance.*

General Method. The above suggestions for teaching elementary arithmetic may be summarized, as follows:

1. The oral solution of inductive examples with small numbers.

2. The induction of the written process from the oral solutions, under the teacher's guidance.

3. The solution of the inductive examples on slate or paper by the written process,—not by the analytic process, which should be oral.

4. The solution of the written problems on slate or paper.

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* For a practical illustration of this method of teaching rules and definitions, see *Oral Lessons in Number*, pp. 185–187.

5. The induction of the rule from the written process and the memorizing of the approved rule.

6. The induction and memorizing of definitions and principles.

III. The Completing Course.

The instruction that completes the course in arithmetic, should differ from the elementary in several important particulars. (1) The problems should be more difficult, and the analyses of mental problems more logical and formal. (2) More attention should be given to abbreviated processes of practical value. (3) The applications to business, the arts, etc., should be wider, this being specially true in mensuration and percentage. (4) More freedom should be given the pupils in the mechanical forms of written work, and special encouragement should be given to original solutions. (5) There should be a more careful development of formulas and principles, and an increased attention generally to the science of numbers. (6) The higher processes, as proportion, involution and evolution, etc., should be included, but all obsolete rules should be excluded.

Metric Measures. The increasing use of the metric measures in science, the arts, and in commerce, claims a place for the system in this higher course, and it should be taught in a practical manner. Great care should be taken to make the pupils practically familiar with the metric units, and this can best be accomplished *by the actual use of the metric measures.* To this end, the school should at least be supplied with a meter measure, a liter measure, and gram and kil-

ogram weights, and the pupils should have much practice in the use of these measures. With the meter they should measure the length and width of the school-room floor, the teacher's desk, the blackboard, etc.; also the distance between objects in the school-room, in the school-yard, etc.; with the liter they should measure water, grain, etc.; and with the gram and kilogram they should weigh different articles. It is only by long practice that pupils can be made as familiar with the metric measures as they are with the common measures.

At first no attention should be given to the metric equivalents, and the only comparisons made between the metric measures and the common measures should be *by the eye*. It can easily be shown that the meter is a little more than a yard; the liter, about a quart; and a kilogram, a little more than two pounds. It will be time enough to teach the exact numerical equivalents, when pupils are so familiar with the metric measures that they can think of them without any reference to the common measures. When a pupil is told, for example, that a room is eight meters long and five meters wide, he should be able to comprehend its dimensions without reducing to yards or feet; and this result can only be attained by the continued use of the meter in measuring distances.

The early introduction of the metric equivalents and the reductions of metric numbers to like common denominate numbers, are mistakes which have resulted in much confusion. This reduction is *the final step in teaching the metric system.*

MORAL TRAINING.

MORAL TRAINING.

THE WILL.

ONE of the most obvious verities in man's conscious experience is the fact that the feelings are the solicitors and prompters of action; but it is an equally obvious fact that the feelings do not determine or necessitate action. We are as conscious of the power to resist and even supplant our impulses and desires, as we are of their solicitations. The soul is endowed with the power to act in accordance with soliciting desires, or to resist and reject their appeals (p. 30); and hence we feel a sense of guilt when we permit a wrong desire to pass out into an act, and also when we consciously cherish or harbor it.

This self-active, self-determining power of the soul is called the *Will*. It is by the power of the will that the soul resists its clamorous appetites, and brings them into subjection to reason. "Appetite," says Hooker, "is the will's solicitor, but the will is the appetite's controller;" and what is true of the will's relation to the appetites is true of its relation to all the impulses of the sensibility.* By an

The Will.

* It will be shown later (p. 316) that this control may be lost by habitual surrender in excessive indulgence.

abiding purpose, the soul may subject all its lower feelings to the higher, and even to the control of a moral principle. The forming of such a supreme purpose has been to many a man the beginning of a new moral life.

Moral Action.

So far as we are able to interpret the actions of brute animals, their actions are necessitated by feelings, and especially by their bodily feelings—sensations, appetites, and instincts—and it is for this reason that the actions of the brutes have no moral quality. If man were endowed only with the power to feel and know, all of his actions would, in like manner, be determined by the strongest impulses at the time, and these would be necessitated by conditions over which he would have no control. This would relieve man of all responsibility for his acts, and, as a consequence, human conduct would have no more moral quality than the actions of brutes. We thus reach the important truth that it is *the voluntary or will element in human action that gives it moral quality.*

Acts of the Will.

An act of will involves a choice between alternative acts. It may be a choice between soliciting motives or a choice between a response to one of their appeals and a rejection of all. When only one feeling makes the appeal, it still involves a choice between a response to the appeal and its rejection. But choice is not a determinative act of will. It is only the initiative act, and it must pass into a *purpose* to act in accordance with the choice made, or directly into an executing volition. A choice is a present act; a purpose is a state of will, reaching from

a choice to its realization. A young man may, for example, consider the alternatives of taking a course in college or accepting a clerkship in a store, and he may wisely choose the college course; but this choice may never take him to college. To be determinative, the choice must pass into a settled purpose that can only cease with the realization of the chosen end. When a purpose thus reaches into the future, controlling all related choices and purposes, it becomes a *governing purpose*.

But neither a choice nor a purpose can pass out into a deed until it is executed by a *volition*—the final determinative act of the will. A volition is the command which the will issues to all the powers of the soul and the subject body to attain the chosen end—to execute the settled purpose. Choices and purposes are thus manifested in actions. They pass from the soul, where they may long have been hidden, into an overt act or deed.

Freedom of Will.

It is this power of the soul to choose and to put its choices into purposes and volitions, that makes man responsible for his conduct, and hence a moral being; and this involves the freedom of the soul in willing or, more briefly, *the freedom of the will*. The moral character of a choice or purpose necessarily depends upon the power of the will, in the identical circumstances, to make a different choice or purpose. When this free power to act differently does not exist, the act of the will is a *necessity*, and, as such, has no moral quality. It is true that the presence of motives necessitates the action of the will in *some* direction, but it does not necessitate its action in a *particular* direction. The will acts in view of

motives, but is free to determine *what its act shall be.* "Motives," says Porter, "impel the will, but they do not compel it."

The assumption that every act of will is necessitated by the strongest motive, either frees man of all moral responsibility for his actions or makes him responsible for the motives that necessitate his actions. Each of these alternatives is in the face of universal consciousness. The universal sense of guilt for known wrong acts is proof of man's responsibility for them, and no fact of conscious experience is more certain than the presence and appeal of motives for which man is not responsible. Man can be morally responsible for the appeal of a motive only when its presence to the soul is due to his own free act, and this involves *the free choice of its presence.* A desire to do a wrong act may be cherished or harbored by a concurring act of the will, as is true in a *wish*, and this complex act or state may be sinful; but the sin is in the concurrence of the will, and not in the mere presence of the desire. The truth is that man as a moral being is responsible for the wrong desires which he has not endeavored to supplant and control, and especially for those which he has voluntarily cherished and strengthened; and this responsibility involves the freedom of the soul in willing. It is by a concurring act of a free will that the soul is brought into bondage to wrong and sinful appetites, affections, and desires. It is thus that moral freedom, man's highest birthright, is limited, and may be even lost.

These truths fully accord with the principle that power and tendency are the abiding results of all psychical action (p. 31). This is specially true of the acts

of the will. Every right choice in the face of a wrong desire makes right choosing easier, and is a new moral force in the life. "Every choice," says Goethe, "is for eternity." It is not only true that choices and purposes leave an abiding trend and energy in the soul, but the current and quality of the feelings are largely determined by the concurrence or control of the will. Every moral act not only involves an act of will, but character, the resultant in power and tendency of all the moral acts of life, is eminently *a state of will.* Character is not a distinctive mark, as the word implies, but an inner force and tendency. It is both a product and a principle—an effect and a cause.

Character.

But let us see a little more clearly the relation of the intellect, the sensibility, and the will in moral action. This relation is partially indicated by the statement that choices and purposes are occasioned by feelings, and that feelings, the bodily feelings excepted, are awakened by knowledge. In the marvelous interaction of the soul's powers, intellectual activity awakens emotions and affections, which pass over into desires, and these make their appeals to the will. It is thus seen that all three of the great powers of the soul are conjoined in conduct, which Matthew Arnold says is "three fourths of life," but the final determining power in this trinity of powers is the will.

Powers Conjoined in Conduct.

It may be added that the will is not only the soul's autocrat in moral action, but it is also the attendant and director of nearly all the conscious activities of the mind. "The normal man," says Schopenhauer, "is two thirds will."

The Training of the Will.

It follows from the above truths that effective moral training involves *the right training of the will*, and this touches the very root of the question of method, now to be considered.

The fact that the act-impelling desires are awakene by knowledge shows that *instruction* in duty has a vital relation to the training of the will, and hence to moral training. Nor is it sufficient that such instruction arouse the feelings, and, to this end, be concrete and illustrative. It should increasingly lift duty and obligation to the domain of the higher motives of reason and conscience—to the plane of *moral principle*. It should be both incidental and regular, and its ends should be intelligently apprehended and systematically pursued and attained

Moral Instruction.

The determining relation of the will to moral action shows that the culture of the feelings is a means and not an end of moral education. Vital moral training can not end with emotions or desires; it must issue in right action. It is true that the feelings furnish impelling motives, and are otherwise important conditions of moral action, but they result in moral character only when they have their issue in an act of the will. The soul may, for example, be swept with emotions of pity, compassion, and sympathy, but if these feelings do not pass into a purpose or out into a deed, they will develop character very little. On the contrary, the indulgence of excessive feeling without action enfeebles the will and makes the character limp and flaccid. It is for this

Culture of Feelings.

reason that the theater has never been a very effective school of morals. It is not the men and women who shed most tears over spectacular wrongs, that are the most ready and heroic in effort to right the wrongs in actual life.

Discipline under Motives.

Effective moral training involves *the discipline of the will to act habitually in view of those motives which release the soul from bondage to low and selfish desires, and make the conscience regal in the life.* The vital importance of this training in school is emphasized by the fact that, while school life affords excellent opportunities for it, both the instruction and the discipline of the school may actually enfeeble and dissipate will power. Diligence in study and outward obedience may both be secured by means that practically divorce conduct and right motive.

Training for Liberty.

It is easy to hedge in a child's conduct by authoritative restraints, and to urge him forward by artificial incitements; but when the restraining hedge is broken down, and the temporary incitement is wanting, then will appear the vital need of the power and habit of self-impulsion and self-guidance. The most dangerous transition in a youth's life is that which carries him from the authoritative control of the family and the school to the responsibility of untried liberty. The shores of this perilous strait of human life are strewn with wrecked manhood.

The home-life and the school-life of the child should prepare him for this transition to freedom by effective training in self-control and self-guidance, and, to this end, the will must be disciplined by an increasing use of motives that quicken the sense of right and make

the conscience regal in conduct. It is not enough that the teacher secures diligence in study, good order, and proper behavior in school. The vital question is, *To what motives does he appeal in gaining these ends?* If these be low and selfish, the results, howsoever fair in appearance, will be like the apples of Sodom in the life. No temporary interest in study, no external propriety of conduct, can compensate for the habitual subjection of the will to the dominancy of the lower motives. The pregnant truth is that no training of the will can stand the supreme test of conduct that does not put its acts in harmony with the *imperative* OUGHT—the last word in the vocabulary of reason and duty.

School Incentives.

The above facts throw a flood of light on the question of *school incentives*—the central element in will training.

The most obvious classification of school incentives is their division into *artificial* and *natural* incentives.

Artificial Incentives.

Artificial incentives are those rewards or incitants which are thrust between the pupil and the natural consequences of study and conduct, and thus become the immediate ends of effort.

They include such incentives as:

1. *Prizes*,—as books, medals, merit-tickets, etc.
2. *Privileges*,—as holidays, early dismissals from school, choice of seats, positions as monitors, etc.
3. *Immunities*,—as exemptions from duty, tasks, etc.

These are the lowest incentives ordinarily used in school, the propulsive or fear motives possibly ex-

cepted; but experience shows that they do not lack power. They may be so incorporated into the discipline of a school, and so intensified as to become its very life—the all-absorbing end of desire and effort. Many a school has been wrought up to a high pitch of interest and effort by the enthusiastic use of the reward of a monthly holiday for the attainment of a given standing in study, deportment, punctuality, and regularity. It seems unnecessary to add that these artificial incentives do not stand the decisive test of character. They may stimulate effort, but they bring the will into captivity to the present and selfish, and feed the moral nature on husks.

Natural Incentives.

Natural incentives are those motives that attend effort and attainment as a natural result or consequence. They range from the more or less selfish to those high motives that beckon the soul to duty, and stir it "with the joy of pure obligation"—the highest joy of life. They spring up in the pathway of duty, and are the appointed attendants on human effort through life.

From the long catalogue of natural incentives, let us select the seven most used in school—the "Royal Seven," as they may be called. These are:

1. *A desire for standing or rank, including the desire to excel.*
2. *A desire for approbation—of equals and superiors.*
3. *A desire for activity and power.*
4. *A desire for knowledge.*
5. *The hope of future good.*
6. *A sense of honor.*
7. *A sense of duty.*

A glance at these seven incentives will suffice to show that, in their influence on the will, and hence moral character, they rise from the first to the seventh; and a little reflection will show that each of them has higher and lower phases.

Higher and Lower Phases.

The desire for standing may be readily lowered, even to an artificial incentive, as is always the case when the sign of rank is made the absorbing end of effort. In too many schools the desire for a high class-mark or a high "per cent" in examination is the ruling passion of the more ambitious pupils. They cram for per cents, and they sometimes cheat for per cents; and this unfortunately is not confined to elementary schools.

The desire for approbation becomes, in its lower phase, a craving for unmerited praise or flattery; while its higher phase includes a desire for the approval of the wise and good, and, still higher, for self-approval, which Porter calls "the most blessed of joys."

The desire for activity and power may have its roots in the coveting of self-glory; or it may spring from a noble desire to honor one's powers, and realize that sense of efficiency, which is one of the deepest springs of human action.

The desire for knowledge may be a mere craving of the personal advantages which the possession of knowledge gives; or it may be a pure and inspiring love of truth for her own sake.

The hope of future good may be purely selfish, or it may be inspired by a noble self-interest, and a benevolent desire to help and bless others.

A sense of honor may be false or true—the former being a servile bondage to the opinions or demands of school-mates, a clique, or a party; and the latter

that fine sense of justice that is born of self-respect and a true regard for the good-will of others.

Religious Correlates.

It should be specially noted that each of these natural incentives has for its highest correlate a *religious motive*. These religious correlates, beginning with the second incentive, may be as follows—each religious correlate being placed above the incentive to which it relates:

A desire for God's approval.
(2) A desire for approbation.
A desire for the power of an endless life.
(3) A desire for activity and power.
A desire to know God and his will.
(4) A desire for knowledge.
The hope of a blessed immortality.
(5) The hope of future good.
The desire to honor one's Creator.
(6) A sense of honor.
A sense of obligation to do God's will.
(7) A sense of duty.

Use of Higher Motives.

It has been assumed in the foregoing discussion that the right training of the will involves the use of the *highest* motives that can be made effective; and hence of two motives equally effective, the higher should always be placed before the pupil. In accordance with this principle, the artificial incentives should be used, if used at all, as *temporary* expedients, to lift a pupil or school to the plane of the natural incentives. Such incentives may properly be used in controlling a school of savages, but as fast as the savage nature is overcome, higher incentives should be substituted.

The same principle is to be observed in the use of the natural incentives. They are not equally abiding in results, or equally valuable in quickening the pupil's sense of right and duty; and hence there should be an increasing use of the higher and more fruitful. The use of lower incentives when those that are higher can be made equally effective, is to sacrifice the best results of will training.

Religious Motives.

It follows that the most efficient training of the will involves an appeal to the religious motives, and this inference is strongly supported by the fact that *the religious motives quicken and energize all the lower motives to which they are related.* It is for this reason, among others, that they have been the mightiest of historic forces, and the mightiest forces in individual life. The religious motives are fibered in modern civilization, and constitute the one authoritative element of the moral law. There has never been a moral code that secured the free obedience of men, that did not derive its highest and most restraining authority from religion; and this is true in pagan as well as in Christian lands.*

Indeed, I know no thoughtful writer who denies that religious sanctions have a greater and more essential influence on the will than any other motives.

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* The much praised moral code of Confucius not only contains references to "Heaven" as the Supreme Being, but it clearly recognizes a future life. ["The Chinese Classics," Part I, pp. ix–xi]; and, besides, it is a historic fact that the influence of the Confucian precepts on Chinese life has increased in the ratio in which the great teacher has been venerated as divine. It is an equally suggestive fact of history that the decay of faith in Greek mythology was attended by a decline in Greek morality, such as it was.

"My belief is," says Mr. Huxley, "that no human being, and no society composed of human beings, ever did or ever will come to much unless their conduct be governed and guided by the love of some ethical ideal," * and he further expressly declares that the religious feeling is "the essential basis of conduct." Even more emphatic testimony, to the same effect, from other eminent scientists and philosophers might be cited.

Obedience to Authority.

This principle is forcibly illustrated in the training of the will *through obedience to authority*,—an essential element in its complete discipline. The child first meets authority in the will of the parent, and obedience to parental authority is the beginning of the process of subjecting feeling and impulse to a higher law. The parent's authority represents both love and power, and the child's obedience has its abiding spring in *reverence*, which Coleridge calls "the synthesis of love and fear." This gives the parent's will ascendency over both the heart and will of the child, and imparts to it a touch of the Absolute. Some one has said that the first deities which a child worships and obeys are his parents.

This discipline of the will in obedience is next taken up by the school whose authority is both personal and institutional. Here the pupil is not only trained in obedience to authority in this new form, but is prepared for obedience to civil or governmental authority, which is institutional, and not personal. To this end, both the authority of the school and of the state should be enthroned in the pupil's rever-

* From address to London School Board.

ence; and this can only be secured by training the will under a deep sense of that Supreme Authority that is back of family, school, and state. We must not be too slow to learn that an essential condition of willing obedience to law is *a reverence for its authority*, and that this involves a reverence *for its source.* Human law has surest and easiest ascendency over the heart and the will when it speaks, not simply by the authority of the people, but also in the name of the King of kings.

Testimony of History. It is believed that history will fully sustain the statement that every wide attempt to ground moral obligation solely on human authority has resulted in the weakening of the conscience, the enfeebling of the will, and the lowering of the moral life of the people. It may be true that a basis of right and wrong can be found in man's moral nature, but the pregnant fact of human experience is that their authority over the will is weak when unsupported by religious sanctions and influence. In the murky atmosphere of carnal and selfish appetites and desires, moral distinctions become obscure and confused. Virtue comes to be regarded as mere self-restraint; temperance as moral cowardice; and theft as the secret redistribution of wrong accumulations. This is sad history.

The deep truth of both reason and human experience is that the religious motives transcend all others in their influence on the will. It is the high sense of obligation which they alone furnish that can free the will from self-bondage to the lower impulses and desires and make its high purposes imperative and abiding in conduct.

In the clear light of these truths, I can not avoid the conclusion that effective moral training in school demands the vitalizing influence of religious truth and sanctions; and I can not suppress the fear that any system of moral training that ignores the Supreme Source of right and duty, that shuts out from obligation all ideas of God and immortality, will not bear the test of character and life.

Religious Sanctions in Moral Training.

Take as an illustration the effect on the will that would result were all consciousness of God's omniscience excluded from school training as a motive. What a help and inspiration to a wayward pupil is the consciousness that the eye of a loving and just teacher rests upon him! What courage and heroism in battle have been inspired by the eye of the great soldier in command! What an incentive to right conduct, and what a restraint to wrong doing, is the eye of the wise and good! Evil doing hides from sight. Men love darkness rather than light not only because but when their deeds are evil. These are but weak illustrations of the inspiring and restraining influence on human conduct that flows from a clear consciousness that there is in this universe an *All Seeing Eye* that is never closed; that He who has said with infinite authority, "Thou shalt not," *sees!* There is no such vanquisher of temptation as the consciousness, "Thou, God, seest me!" The exclusion of all thought of that Omniscient Eye from school training would be like shutting out the light of the sun and substituting the glimmer of candles!

Religion in the Public School.

The consideration of one more question is necessary to complete this study of moral education; viz., *To what extent can religious motives and influence be used in the public school?*

In answering this question, it must be kept in mind that the highest efficiency of the public school is tested by its results in moral character, and hence its central aim is effective moral training. The truth of these statements will be questioned by no one who has carefully considered the functions and value of public education. The assumption that intellectual training is the sole duty of the public school is made as an objection to the system, and never as a ground of its defence. It is always urged as proof that public education has no sufficient foundation on which to stand, and no imperative claim to public support.

If it be conceded that effective moral training is the central duty of the public school, it must also be conceded that *whatever is an essential means to such training should have due place in its instruction and discipline.*

Extreme Views.

There are two extreme and opposite views on the relation of religion to moral training in the public school. The one asserts that public school training must be completely divorced from religion,—it being assumed that the denial of the right of the public school to give sectarian religious instruction shuts out all religious truth and sanctions. The other extreme view claims that formal religious

instruction must be made the basis of all moral training,—it being assumed that the absence of the catechism and other technical instruction in religion from the school necessitates the absence of all vital religious influence.

The philosophy of will training, so fully presented in previous pages, clearly indicates that there is a practical mean between these two extreme views. The truths there considered show that what is needed to give efficiency to moral training in school is not formal religious instruction so much as the quickening of the conscience and the influencing of the will by the wise use of religious motives and sanctions. When a witness appears in court to give testimony, he is not formally instructed in religious doctrines, but his conscience is quickened and its authority reinforced by an oath that appeals to the Omniscient Searcher of hearts and the Supreme Source of truth and obligation. A similar but less formal use of the common sanctions of religion is needed to quicken the moral sense and reinforce the lower motives in the moral training of the young; and whatever may be true of the necessity of the religious oath in the administration of justice, there can be no question respecting the importance of religious sanctions and motives in school training. In view of the imperative need of the most vital moral training possible in our schools, this necessary use of religious influence should receive universal approval.

The Practical Mean.

The writer is aware that theoretical objections can be urged against the practicability of the golden mean above suggested, but happily there is no such difficulty or confusion in the *practice* of thousands of

teachers. The great majority of American schools are religious without being sectarian, and it is high time that this fact was more universally recognized.

Use of the Bible.

It is doubtless true that the most impressive forms of presenting religious sanctions to the mind and heart of the young are prayer, silent or spoken, and the reverent reading of the Bible, especially those portions that present human duty in its relations to the Divine Will—forms still permitted and widely used in four fifths of American schools. I share Mr. Huxley's serious perplexity in seeing how the needed measure of religious influence in our schools can be secured without the presence of the Bible; and yet, to this end, its formal and stated reading may not be essential, since there are other ways in which its vitalizing truths may be brought home to the conscience and the life.

At least three avenues are open for the introduction of religious ideas and sanctions into all our schools. These are sacred song, the literature of Christendom, and, best of all, faithful and fearless Christian teachers, the living epistles of the Truth. Against these there is no law.

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N. B. The figures refer to pages.